



THE HEALTH OF TEXANS

TEXAS STATE

STRATEGIC HEALTH PLAN

PART I

TEXAS DEPARTMENT OF HEALTH



OFFICE OF THE GOVERNOR

July 22, 2002

RICK PERRY

GOVERNOR

Mario R. Anzaldúa, M.D.
Chair, Texas Board of Health
Eduardo J. Sanchez, M.D., M.P.H.
Commissioner of Health
Texas Department of Health
1100 West 49th Street
Austin, Texas 78756

Dear Doctors Anzaldúa and Sanchez:

The *Health of Texans: State Strategic Health Plan Part I* by the Texas Department of Health (TDH) outlines many important and emerging health concerns our state will face in the years ahead. I applaud the efforts of TDH to compile the extensive and valuable data encompassed in this report.

Texas has made significant progress in our tobacco prevention efforts, which have led to a reduction in youth smoking rates. In addition, we have reduced death rates from coronary heart disease and witnessed a decline in homicide rates over the past decade.

But in spite of those advances, Texas still has areas to address. We must continue to stress the importance of immunizations for all Texas children. Many Texans do not have healthy eating and exercise habits. Further, Texans in the border region have diabetes and tuberculosis rates higher than the statewide average. Changes in the racial and ethnic makeup of our state mean that we must consider the implications of disparities in such issues as prenatal care and use of health screenings.

Armed with this information, Texas must take the next steps to address our health concerns. However, TDH cannot do the work alone. Rather, it must drive the process to develop a comprehensive strategic health plan for the state. To adequately improve the health of all Texans, the department must reach out to its partners and work hand in hand to develop achievable health improvement goals and strategies. I am encouraged by your plan to convene a statewide public health steering committee to address the health challenges identified in this report.

I am also aware that TDH will soon be publishing the *Public Health Improvement Plan: State Strategic Health Plan Part II* which will discuss the need for better coordination in assuring essential public health functions statewide. Therefore, I urge the steering committee to develop public health delivery improvement goals.

These collaborative efforts of statewide public health stakeholders should help create a culture of health and fitness in Texas and a dynamic public health structure necessary to sustain it.

Again, thank you for this effort, and I fully support you in taking action to address the health of Texans.

Sincerely,

A large, stylized handwritten signature of Rick Perry in black ink.

Rick Perry
Governor

RP:vfk



STATEMENT FROM THE CHAIR OF THE TEXAS BOARD OF HEALTH AND THE TEXAS COMMISSIONER OF HEALTH

Texas has many health assets and opportunities, but Texas also has some critical health challenges that must be addressed. We intend to lead the Texas Department of Health (TDH) to address the health challenges within our purview as effectively and efficiently as possible. We intend for the health of Texans to improve measurably because of the efforts of TDH.

We at TDH know that TDH alone cannot perform all of the diverse activities needed to address the health of Texans; therefore, we intend to invite partners across the state to work better together to create a culture of health and fitness in Texas.

This report contains a wealth of information that we are proud to present as a snapshot of the health of Texans. In addition to point-in-time health status information, the data in the report suggest some broad-based, systemic, and long-range findings. We would like to address the findings and make some commitments on behalf of TDH.

Coordination counts: We wholeheartedly believe in the finding in this report that coordination counts. Beginning this fall, TDH will convene and lead a statewide public health steering committee to address health status challenges identified in this report.

The steering committee will also address the findings of a second TDH report to be published in August 2002 — the *Public Health Improvement Plan: Texas State Strategic Health Plan Part II*. The *Public Health Improvement Plan* addresses the need for a coordinated public health system. The steering committee will also establish goals for making improvements in the public health system.

Healthy behaviors are key: In every public health effort undertaken by TDH, efforts will be made to identify and target the behaviors that result in poor health outcomes as well as poor health status. TDH will call upon front-line and academic expertise in best practices in public health promotion. In addition, TDH commits to evaluating and reporting on the effectiveness of health promotion efforts in improving health status.

Despite the strong role individual behaviors can play in promoting the state's health, it must also be recognized that larger factors such as economic hardship, environmental problems, inadequate health infrastructure, and poor-quality health education, to name a few, are not changeable by individuals and must be addressed by state and local policies. TDH will support innovative ways to create an environment in which individuals have real choices and understand the full implications of those choices.



Different groups have different challenges and resiliencies: We at TDH recognize that Texas is a diverse state and that creating a culture of health and fitness depends on addressing the resiliencies and challenges of different socioeconomic, racial, ethnic, and geographic groups in Texas. In designing and implementing our various public health programs, TDH will make a renewed effort to assure that our programs can be made successful for all Texans and we will share what we learn with our partners.

Health affects the economy: As this report outlines, the effect of successful public health efforts on the economy can be very positive. TDH will make a strong effort to measure the savings and benefits from our programs and, when appropriate, make those savings and benefits part of the dialogue with our partners in prioritizing public health efforts.

Data, data, data: Data are a cornerstone of public health efforts. We will increase our efforts to provide accessible, standardized data on which to base sound public health policy. TDH will better coordinate its data functions to help identify and prioritize health status measures at the state and sub-state levels. In addition, we will work with other entities gathering public health data to identify and address data gaps.

We believe that TDH can help create a Texas in which all of us can experience health in a measurably better way. ¡Vámonos!



Mario R. Anzaldúa, M.D.
Chair, Texas Board of Health



Eduardo J. Sanchez, M.D., M.P.H.
Texas Commissioner of Health





ACKNOWLEDGMENTS AND STAFF

Publication of
the Office of Health Information and Analysis
Texas Department of Health

Gyl Wadge Kovalik, M.P.Aff.

Primary Author

Office of Health Information and Analysis

Carolyn Medina, M.A., M.L.I.S.

Research and Editorial Assistance

Texas Department of Health Library

*The following agencies, bureaus, divisions,
and programs made this report possible:*

Texas Department of Health

Office of Health Information and Analysis

Peggy Belcher, M.A.
Jimmy Blanton, M.P.Aff., M.A.
Shaku Desai, M.A., M.S.
Bruce Gunn, Ph.D.
John Hugg, M.A.
Steven Lowenstein
Gary Rutenberg, Ph.D.

Office of Strategic Health Planning

Rick Danko, Dr.P.H.
Nicholas Hoover, M.P.Aff.
Jessica Marien, M.P.H.
Hallie Overton, Ph.D.
Laura Vinson (student intern)

Office of Public Health Practice

Mary C. Soto, M.S.Ed.

Office of the State Epidemiologist

Dennis M. Perrotta, Ph.D.
Mariah Ramon
Julie Rawlings, M.P.H.

Office of the Deputy Commissioner for Programs

Martha McGlothlin, M.A.

Associateship for Disease Control and Prevention

Celan Alo, M.D.
David G. Bastis, M.P.H.
Elaine Braslow, M.Ed.
Mark Canfield, Ph.D.
Amy Case, M.A.
Sherry Clark, M.P.H.
Rita Espinoza, M.P.H.
Linda Gaul, Ph.D., M.P.H.
John Hellsten, Ph.D.
Kate Hendricks, M.S., M.P.H.&T.M.
Judy Henry, M.A.
Philip Huang, M.D., M.P.H.
Barbara Keir
Jim Lee
Sidney Lock
Lisa Marengo, M.S.
Sharon Melville, M.D.
Neil Pascoe, R.N.
Jan W. Pelosi, M.P.H.
Tammy Sajak, M.P.H.
Gail Shevick, M.A.



Jeff Shire, M.S.
Kathleen Shupe-Ricksecker, Ph.D.
Jennifer Smith, M.S.H.P.
Laura Tabony, M.P.H.
Michelle C. Thomas, M.S.
Alma Thompson
Keller Thormahlen, M.S.
Ann Tyree, M.S.
Ed Weckerly, M.S.
Melanie Williams, Ph.D.
Anne Williamson, M.Ed.
Pamela Winscher
David Zane, M.S.

Associateship for Family Health

Gina Baber
Bryan Bayles, M.A.
Fouad Berrahou, Ph.D.
Linda Bultman, Ph.D.
Jerry Felkner, D.D.S., M.P.H.
Kathy Griffis-Bailey, M.S.
Margaret Mendez, M.P.A.
Ramdas Menon, Ph.D.
Anne Phillips, D.V.M., M.P.H.
Larry Swift, M.U.U.P.
Lesia Walker, M.D., M.P.H.
Susan Warren, M.Ed., M.S.N.

Special thanks to the staff of the
Health Communications Division
who edited, designed, and
formatted the document —
especially Irma R. Choate,
Lindsey Eck, and Joyce Leatherwood.

***Associateship for Consumer
Health Protection***

Jim Arnold
Richard Ratliff, M.S.

Dan Sowards
Bob Woldman, M.A.

**Texas Department of Health
Editorial Board**

John Burlinson, M.L.S.
Marsha Walker Canright
Catherine Cooksley, Dr.P.H. (*Texas
Public Health Association*)
Rick Danko, Dr.P.H.
John Herbold, D.V.M., Ph.D., M.P.H.
(*Texas Public Health Association*)
Lee Lane (*Texas Association of Local
Health Officials*)
Martha McGlothlin, M.A.
Jayne Nussbaum, M.P.Aff.
Eduardo J. Sanchez, M.D., M.P.H.
Margo S. Scholin, J.D., M.S. (*Board of
Health*)
Mary C. Soto, M.S. Ed.
Susan Steeg, J.D.
Charles Stuart (*Texas Health and
Human Services Commission*)

**Texas Natural Resource
Conservation Commission**

Janet Pichette, M.S.

**Texas Department of Mental Health
and Mental Retardation**

James L. Smith

**Texas Commission on Alcohol and
Drug Abuse**

A.J. Ernst, Ph.D.

**Texas Health and Human Services
Commission**

Edli Colberg

Mario R. Anzaldúa, M.D.
Chair, Texas Board of Health

Eduardo J. Sanchez, M.D., M.P.H.
Texas Commissioner of Health





TABLE OF CONTENTS

Letter from the Governor

Statement from the Chair of the Texas Board of Health and
the Texas Commissioner of Healthi

Acknowledgments and Staffiii

Executive Summaryvii

| | | |
|-------------------|---|-----------|
| Chapter 1. | Introduction | 1 |
| | Purpose of the report | 1 |
| | Key concepts | 1 |
| | Note about the selected health status indicators | 2 |
| | Limitations | 3 |
| Chapter 2. | State Profile | 5 |
| | Demographics | 5 |
| | Access | 9 |
| | Causes of death | 11 |
| Chapter 3. | Behavioral Health Risks | 15 |
| | Cigarette smoking | 17 |
| | Overweight and obesity | 21 |
| | Physical activity | 23 |
| | Alcohol abuse | 25 |
| | Illicit drug use | 26 |
| | Preventive health services | 28 |
| | Sexual behavior | 30 |
| Chapter 4. | Chronic Diseases | 33 |
| | Coronary heart disease | 34 |
| | Cancer | 34 |
| | Stroke | 39 |
| | Asthma | 40 |
| | Diabetes | 42 |
| | Geriatric chronic health conditions | 44 |
| Chapter 5. | Infectious Diseases | 49 |
| | HIV/AIDS | 49 |
| | Syphilis | 52 |
| | Chlamydia | 54 |



| | | |
|--------------------|---|------------|
| | Gonorrhea | 56 |
| | Hepatitis A | 58 |
| | Hepatitis B | 59 |
| | Hepatitis C | 61 |
| | Tuberculosis | 63 |
| | Pertussis—childhood immunizations | 65 |
| | Meningococcal infection | 67 |
| | Foodborne infections | 69 |
| | Emerging issue: bioterrorism | 70 |
| Chapter 6. | Maternal and Child Health | 73 |
| | Infant mortality | 73 |
| | Neural tube defects | 74 |
| | Prenatal care | 75 |
| | Low birth weight babies | 77 |
| | Tobacco and alcohol use during pregnancy | 78 |
| | Teen mothers | 79 |
| Chapter 7. | Injuries | 81 |
| | Unintentional injury (accidental) deaths | 82 |
| | Motor vehicle crashes | 82 |
| | Homicide | 84 |
| Chapter 8. | Mental Health | 87 |
| | Depressive Disorder | 88 |
| | Suicide | 90 |
| | Schizophrenia | 91 |
| Chapter 9. | Dental Health | 93 |
| | Tooth decay | 93 |
| | Sealants | 95 |
| | Fluoridation | 95 |
| | Last dentist visit | 96 |
| Chapter 10. | Environmental Health | 99 |
| | Outdoor air quality | 99 |
| | Indoor air quality | 101 |
| | Drinking water quality | 101 |
| | Surface water quality | 102 |
| Chapter 11. | Findings | 105 |
| Endnotes | | 107 |
| Appendix: | Texas Strategic Health Status Indicators | 163 |



EXECUTIVE SUMMARY

This executive summary provides highlights from the entire report *The Health of Texans: Texas State Strategic Health Plan, Part I*. The full text of the report is available upon request and at the Texas Department of Health Website <<http://www.tdh.state.tx.us>>.

The health of Texans is everyone's business. The key to good health for all Texans is creating a culture of health and fitness in which individuals and communities make healthy choices as a matter of course. No single entity such as the Texas Department of Health (TDH) can, by itself, move a population closer to a culture of health.

TDH envisions that, as the state's public health agency, we can provide the leadership and planning to better coordinate the efforts of state and local organizations and individuals to make measurable improvements in the public's health. The Commissioner of Health will convene a broad-based stakeholder steering committee following the publication of this report to establish Texas health improvement goals that all partners will jointly take responsibility for developing and reaching. The information in the report will focus health improvement discussions among the public health stakeholders.

The steering committee will also address the findings of a second TDH report to be published in August 2002 — the *Public Health Improvement Plan: Texas State Strategic Health Plan Part II*. The *Public Health Improvement Plan* addresses the need for a coordinated public health system. The steering committee will also establish goals for making improvements in the public health system.

Findings

The full text of *The Health of Texans* report provides data from Texas for the following categories of health status indicators: behavioral health risks; chronic diseases; infectious diseases; maternal and child health; injuries; mental health; dental health; and environmental health issues. When possible, national comparison data are provided, as well as trend information and data sorted by racial/ethnic group, gender, and age group. Notes on the costs of health conditions are also provided when possible.

When viewing the data as a whole, some findings are worth reporting and considering in making plans to address health status in Texas. These findings are a starting place for the proposed stakeholder steering committee discussions.

1. Coordination counts.

Many public and private entities do crucial work in addressing the health of Texans. Examples of some important coordination and collaboration efforts exist. However, Texas generally lacks a coordinated approach to establishing health goals, having individual organizations take responsibility for reaching those goals, measuring the impact of coordinated efforts, and making adjustments over time.



2. Healthy behaviors are key.

The topics discussed in this report are the major or emerging issues that affect the health of Texans. For the majority of these health conditions, adopting healthy behaviors is the key to avoiding or reducing their negative impacts. How to get Texans, individually and collectively, to adopt healthy behaviors is the primary question left for further investigation and action after understanding the major health threats described here.

Despite the strong role individual behaviors can play in improving the state's health, it must also be recognized that some key factors influencing health are not generally changeable by individuals. Such things as pollution, poor health infrastructure, low-quality educational systems, and economic hardship must often be addressed by policy decisions at the community level or above.

3. Different groups have different challenges and resiliencies.

Available data make it clear that some Texans experience health differently depending on their race/ethnicity, gender, and age group. Other data show important differences by region, socioeconomic status, educational attainment, family structure, culture, language, etc. While some work has been done to understand why some health outcomes are tied to these characteristics, generally our understanding is limited.

4. Health affects the economy.

The costs of diseases and their consequences highlighted throughout this report are staggering. Investing in creating a culture of health and fitness in Texas makes economic sense.

5. Data, data, data.

Understanding the health of Texans depends on data that are current, accurate, comparable over time and location, and easily accessible. For some important diseases or health conditions in Texas, the available data do not meet these criteria.

Causes of Death

“Leading causes of death” is perhaps the most basic health indicator on the macro level that can serve as a frame of reference for other health issues. Table I compares the leading causes of death for whites, African Americans, and Hispanics in Texas and the United States.* Most of the causes of death in the table are discussed in more detail in the body of the report. The most current data available for Texas are for 2000; most current for the U.S., 1999.

*Throughout this report, the major racial/ethnic groups in Texas — white, African American, and Hispanic — will be discussed. “White” refers to non-Hispanic whites. “African American” refers to non-Hispanic African Americans. “Hispanic” refers to persons of Hispanic national origin or ethnicity who may be of any race. The three racial/ethnic groups are mutually exclusive in the statistics noted.



**Table I Leading Causes of Death by Race/Ethnicity,
Texas (2000) and U.S. (1999)**

| Leading Causes of Death (as % of total deaths in racial/ethnic category) | TX Whites¹ | U.S. Whites² | TX Afr. Amer.³ | U.S. Afr. Amer.⁴ | TX Hispanics⁵ | U.S. Hispanics⁶ |
|--|---|---|---|--|--|---|
| 1 | Diseases of the heart (29.8%) | Diseases of the heart (31.1%) | Diseases of the heart (28.4%) | Diseases of the heart (27.6%) | Diseases of the heart (24.0%) | Diseases of the heart (24.9%) |
| 2 | Cancer (22.8%) | Cancer (23.4%) | Cancer (22.3%) | Cancer (21.8%) | Cancer (19.5%) | Cancer (21.8%) |
| 3 | Stroke (7.4%) | Stroke (7.1%) | Stroke (7.3%) | Stroke (6.6%) | Accidents (unintentional injuries) (8.0%) | Stroke (6.6%) |
| 4 | Chronic lower respiratory diseases (5.8%) | Chronic lower respiratory diseases (5.7%) | Accidents (unintentional injuries) (4.6%) | Accidents (unintentional injuries) (4.4%) | Diabetes (6.9%) | Accidents (unintentional injuries) (4.4%) |
| 5 | Accidents (unintentional injuries) (4.5%) | Accidents (unintentional injuries) (3.8%) | Diabetes (4.3%) | Diabetes (4.2%) | Stroke (6.2%) | Diabetes (4.2%) |
| 6 | Influenza and pneumonia (2.6%) | Influenza and pneumonia (2.8%) | Chronic lower respiratory diseases (2.8%) | Chronic lower respiratory diseases (2.8%) | Chronic liver disease and cirrhosis (3.2%) | Chronic liver disease and cirrhosis (2.9%) |
| 7 | Diabetes (2.6%) | Diabetes (2.5%) | HIV (2.5%) | HIV (2.7%) | Assault (homicide) (2.2%) | Homicide (2.8%) |
| 8 | Alzheimer's disease (2.5%) | Alzheimer's disease (2.1%) | Assault (homicide) (2.0%) | Homicide (2.7%) | Influenza and pneumonia (2.2%) | Chronic lower respiratory diseases (2.8%) |
| 9 | Suicide (1.5%) | Nephritis, nephrotic syndrome, and nephrosis (1.4%) | Influenza and pneumonia (1.9%) | Nephritis, nephrotic syndrome and nephrosis (2.4%) | Chronic lower respiratory diseases (2.0%) | Influenza and pneumonia (2.2%) |
| 10 | Septicemia (1.2%) | Suicide (1.3%) | Nephritis, nephrotic syndrome, and nephrosis (1.9%) | Influenza and pneumonia (2.1%) | Septicemia (1.5%) | Certain conditions originating in the perinatal period (2.1%) |

Source: Texas Department of Health.



Behavioral Health Risks

Texans are doing better than the national average in avoiding some health risks. However, for other risk behaviors, Texas lags behind the national average. Table II summarizes some of the key health-risk behavior statistics for Texas and the United States.

Table II Behavioral Health Risks
Texas and U.S.

| Health Risk | Texas | U.S. |
|---|---|--|
| Cigarette smoking — adults ⁷ | 22.1% of adult Texans are current smokers (2000) | 23.2% of adults in the U.S. are smokers (2000) |
| Cigarette smoking — youth ⁸ | 25% of high school students reported current cigarette use (2001) | 28% of high school students reported current cigarette use (2000) |
| Overweight and obesity — adults ⁹ | 23.1% of Texas adults are obese; an additional 36.7% are overweight (2000) | 20.1% of adult Americans are obese; an additional 36.7% are overweight (2000) |
| Overweight and obesity — youth ¹⁰ | 14% of Texas high school students are overweight or obese (2001) | 10.5% of U.S. high school students are overweight or obese (2001) |
| Physical inactivity — adults ¹¹ | 28.5% of Texas adults participated in no physical activity in the past month (2000) | 26.9% of U.S. adults participated in no physical activity in the past month (2000) |
| Physical inactivity — youth ¹² | 35% of Texas high school students do not participate in sufficient physical activity (2001) | 35% of U.S. high school students do not participate in sufficient physical activity (2001) |
| Alcohol abuse — binge drinking (adults) ¹³ | 18.2% of Texas adults reported binge drinking (2000) | 14.9% of U.S. adults reported binge drinking (1999) |
| Alcohol abuse — youth ¹⁴ | 48.6% of high school students reported current alcohol use (2001) | 47.1% of high school students reported current alcohol use (2001) |
| Illicit drug use — adult | 10% of adult Texans reported past-year illicit drug use (2000) ¹⁵ | 10% of adult Americans reported past-year illicit drug use (2000) ¹⁶ |
| Illicit drug use — youth ¹⁷ | 41% of Texas high school students had used marijuana during their lifetime (2001) | 42% of U.S. high school students had used marijuana during their lifetime (2001) |
| Lack of pneumococcal vaccination for adults aged 65 and older ¹⁸ | 44.1% of 65+ Texans had never received a pneumococcal vaccination (1999) | 45.1% of Americans 65+ had never received a pneumococcal vaccination (1999) |
| Lack of mammography ¹⁹ | 23% of women aged 40 and older had never had a mammogram and breast exam (2000) | 18% of women aged 40 and older had never had a mammogram and breast exam (2000) |

Source: Texas Department of Health.



Chronic Diseases

Coronary Heart Disease

Coronary heart disease (CHD) is the single largest killer of Texans and Americans alike.²⁰ However, ten-year mortality trend data in Texas show that age-adjusted rates for CHD have decreased significantly since 1989.²¹

In Texas, death rates from CHD are highest for African Americans as compared with whites and Hispanics. Five-year age-adjusted mortality data show that Texas males have approximately twice the risk of dying from CHD compared with females.²²

Cancer

Cancer is a diverse group of diseases characterized by uncontrolled growth and spread of abnormal cells anywhere in the body. The American Cancer Society estimates that approximately one in two men and one in three women alive today will develop some type of cancer in their lifetime.²³

The overall cancer experience of Texans differed substantially by race/ethnicity in 1998 in both incidence and mortality. The highest rates were in African Americans, then whites, then Hispanics.²⁴

Prostate cancer was the leading new cancer in Texas men in 1998; *breast cancer*, the leading new cancer in women. *Lung* and *bronchus cancers* were the second, and *colon* and *rectum cancers* the third, most commonly diagnosed cancers in Texas in 1998. Prostate, breast, lung and bronchus, and colon and rectum cancers accounted for almost 50 percent of all cancers reported in Texas in 1998.²⁵

Stroke

Stroke is the third leading cause of death in both Texas and the United States.²⁶

Five-year age-adjusted mortality data for Texas show that among the racial/ethnic groups, African Americans have the highest mortality rates for stroke, then whites, then Hispanics.²⁷

Up to one-third of stroke survivors need help caring for themselves, 20 percent need help walking, and 70 percent are not able to perform the same job tasks they did before the stroke.²⁸

Diabetes

Diabetes was the sixth leading cause of death in Texas in 2000.²⁹

Five-year age-adjusted mortality data for Texas show that the mortality rates for African Americans and Hispanics were two to three times higher than for whites.³⁰

In 2000, approximately 6.2 percent of the adult Texas population and the same percentage of the adult U.S. population reported having been diagnosed with diabetes.³¹



Geriatric Health Conditions

Many of the diseases discussed throughout this report affect older Texans more often or more severely than younger adult age groups; however, osteoporosis, arthritis, and Alzheimer's disease predominantly affect the elderly. With elderly Texans expected to number 2.5 million by 2010, these geriatric health conditions will have important effects on the population's health.³²

Approximately 2 million Texans have *osteoporosis* or low bone mass and 80,000 Texans experience osteoporosis-related fractures each year.³³ In the U.S., 80 percent of those affected by osteoporosis are women.³⁴

An estimated 21 percent of Texas adults suffer from *arthritis*.³⁵ One and a half million Texans report arthritic conditions as a cause of activity limitation.³⁶ In Texas and the U.S., Hispanics tend to suffer less from arthritis than whites or African Americans.³⁷ Women report arthritis more than men in Texas and the U.S.³⁸

In both Texas and the U.S., approximately 10 percent of persons 65 and older have *Alzheimer's disease* and approximately 50 percent of those older than 85 have Alzheimer's.³⁹

Infectious Diseases

HIV/AIDS

In both Texas and the U.S., *AIDS* affects African Americans more than Hispanics and whites.⁴⁰

In both Texas and the U.S., *HIV* affects men more than women.⁴¹ However, higher rates of HIV infection in women than in past years indicate an increasing spread of new infections among women.⁴²

The 7.0 percent increase in reported AIDS cases from 2000 to 2001 in Texas marks the first increase in AIDS numbers in five years.⁴³

Other Sexually Transmitted Diseases

The 497 reported *syphilis* cases in Texas in 2001 represented a 20 percent increase from cases reported in 2000, ending a nine-year downward trend.⁴⁴ In both Texas and the U.S., syphilis affects African Americans much more frequently than whites or Hispanics.⁴⁵

Over the past several years, *gonorrhea* rates in Texas and the U.S. have remained stable.⁴⁶ In both Texas and the U.S., gonorrhea affects African Americans much more frequently than whites or Hispanics.⁴⁷

Hepatitis A, B, and C

In Texas, *hepatitis A (HAV)* affects Hispanics more than African Americans or whites.⁴⁸ In the U.S., children between the ages of 5 and 14 have the highest incidence of HAV among age groups.⁴⁹

African Americans are affected by *hepatitis B (HBV)* more than Hispanics and whites in both Texas and the U.S.⁵⁰ Males are affected by HBV more than females statewide and nationally.⁵¹

Males have a greater incidence of *hepatitis C (HCV)* than females in Texas and the United States.⁵² The CDC estimates that the incidence of HCV in the U.S. decreased from an average of 240,000 new cases per year in the 1980s to about 40,000 per year in 1998,⁵³ largely because of a decrease in transfusion-associated infections due to better blood-supply screening.⁵⁴



Tuberculosis

Between 1994 and 2000, the number of *tuberculosis* (TB) cases in Texas decreased 41 percent.⁵⁵ However, in 2000–01, TB cases increased 9 percent (from 1,506 to 1,643 cases).⁵⁶ In the U.S., TB incidence has declined steadily since 1992, including between 2000 and 2001.⁵⁷

The 14 Texas counties that border Mexico have a TB rate of 12.8 cases per 100,000 population, versus a statewide TB rate of 7.9 cases per 100,000 population.⁵⁸

Pertussis — Childhood Immunization

Pertussis (whooping cough) is a highly contagious upper respiratory disease. Although it is vaccine-preventable, Texas has experienced high levels of morbidity from pertussis, with an average of more than 150 cases reported each year since 1990. In 2000, 615 cases of pertussis were reported in Texas.⁵⁹

This pertussis incidence is symptomatic of a larger childhood immunization problem in Texas. According to the 2000 National Immunization Survey, Texas ranks last among all states for the series of vaccines that includes pertussis for children 19–35 months of age, with only 69.5 percent of children immunized.⁶⁰

Foodborne Infections

In 1999, there were 2,198 cases of *salmonellosis* reported in Texas, for an incidence of 11 per 100,000. Children under age 5 are especially vulnerable to salmonellosis, due to their underdeveloped immune systems. Children under age 1 had an incidence of 145 per 100,000 population in 1999 in Texas.⁶¹

Like salmonellosis, the highest incidence for *shigellosis* is in children under 5 years of age (53 per 100,000 population in 1999 versus an overall rate of 11 per 100,000 population).⁶²

Emerging Issue: Bioterrorism

Between October and December 2001, there were 11 confirmed cases of *inhalation anthrax* in the United States as the result of intentional release of anthrax spores — five resulted in fatalities. No cases were reported in Texas. Prior to October 2001, the last case of inhalation anthrax in the U.S. occurred in 1976.⁶³

Smallpox was eradicated worldwide by 1980.⁶⁴ The last cases of smallpox in the U.S. occurred in 1949.⁶⁵ Several factors fuel concerns about smallpox as a possible bioterrorist weapon: up to 30 percent of infected persons die; the scabs formed when the disease is active permanently disfigure victims; there is no treatment for the disease; the disease is communicable from person to person; the general population in the U.S. has not been vaccinated in more than 25 years and, it is known that Russia, at least, has smallpox virus and the capacity to produce large quantities.⁶⁶



Maternal and Child Health

Infant Mortality

The 2000 *infant mortality* rate in Texas was 5.7 per 1,000 live births.⁶⁷ Nationally in 2000, the rate was 6.9 per 1,000 live births.⁶⁸ In both Texas and the U.S., the infant mortality rate for African Americans is more than twice the rate for whites and Hispanics.⁶⁹

Neural Tube Defects

Beginning January 1998, the U.S. Food and Drug Administration (FDA) required folic acid fortification of U.S. grain products sold in the U.S. Recent national data (including Texas) comparing neural tube defect (NTD) prevalence before and after mandatory fortification indicate a 31 percent decline in the birth prevalence of spina bifida and a 16 percent decline in anencephaly. For the period from October 1998 through December 1999, national rates from combined birth defects registry data were 3.54 per 10,000 live births for spina bifida and 2.05 for anencephaly.⁷⁰

The 14 counties bordering Mexico have consistently experienced exceptionally high rates of NTDs, with anencephaly rates spiking at times, in certain counties, to as high as 26 per 10,000 live births.⁷¹

Prenatal Care

In Texas in 2000, 12.5 percent of white women lacked *prenatal care* in the first trimester, compared to 28.8 percent of Hispanic women and 23.7 percent of African-American women.⁷² Across the nation, there were similar disparities in 2000.⁷³

Low Birth Weight Babies

In 2000, 7.4 percent of babies in Texas were *low birth weight*,⁷⁴ as compared with 7.6 percent nationally.⁷⁵ Low birth weight babies are at increased risk for negative health outcomes and death.⁷⁶ In both Texas and the U.S., the percentage of low birth weight babies born to African American women was almost twice that for Hispanic and white women.⁷⁷

Tobacco and Alcohol Use During Pregnancy

Tobacco and alcohol use during pregnancy have been shown to cause negative health outcomes in infants. When women smoke during pregnancy, they increase their risk for preterm delivery and for having a low birth weight baby, both of which are associated with increased infant mortality.⁷⁸ Alcohol can cause low birth weight and other negative health outcomes. One of the most detrimental outcomes of alcohol use during pregnancy is Fetal Alcohol Syndrome (FAS). Children with FAS can have serious lifelong disabilities, including mental retardation, learning disabilities, and serious behavioral problems.⁷⁹

Tobacco and alcohol use during pregnancy are self-reported data taken from birth certificates and are considered by many to be substantially underreported.⁸⁰ In 2000, 6.4 percent of Texas mothers reported using tobacco during pregnancy.⁸¹ In 2000, 12.2 percent of mothers nationwide reported smoking during pregnancy.⁸² Only 0.9 percent of Texas and U.S. mothers reported consuming alcohol during pregnancy in 2000.⁸³



Teen Mothers

Birth certificate data demonstrate that one-third of pregnant teens receive inadequate prenatal care. Infants born to young mothers are more likely to be low birth weight, to have childhood health problems, and to be hospitalized than are those born to older mothers.⁸⁴

In both Texas and the United States, the birth rate for teens has declined since 1994.⁸⁵ Still, the teen birth rate for the U.S. is highest of all developed countries.⁸⁶

Injuries

Motor vehicle crashes, suicide, and homicide — in that order — are the three most common causes of injury deaths in Texas.⁸⁷ (Suicide is discussed under “Mental Health.”)

The *unintentional injury mortality* rate has increased in Texas since 1994 to a current rate of 37.4 per 100,000 population. Unintentional injuries (accidents) were the fourth leading cause of death among all Texans in 2000 and the leading cause for Texans ages 1–34.⁸⁸

In 2000, 3,679 people were killed and more than 300,000 injured in *motor vehicle crashes*. Many of these deaths and injuries could have been prevented had drivers or passengers been using seat belts.⁸⁹

Homicide rates have been declining in Texas and the U.S. through the 1990s.⁹⁰ Males tend to be both murder victim and perpetrator much more often than females in both Texas and the United States.⁹¹ Handguns are used to commit the majority of murders in Texas and the U.S.⁹²

Mental Health

The Texas Department of Mental Health and Mental Retardation reports that more than 150,000 children and approximately 375,000 adults in Texas have severe mental illnesses that are disabling and require intervention.⁹³

Depressive Disorder

More than 400,000 Texans are estimated to suffer from major *depressive disorder*.⁹⁴ Nationwide, nearly twice as many women as men suffer from a depressive disorder each year.⁹⁵

Suicide

Suicide is an indicator of the mental health status of a population, because suicide occurs most frequently as the result of a mental disorder.⁹⁶ The state suicide rate in 2000 was 10.3 per 100,000 population (versus 10.7 nationally in 1999).⁹⁷ In both Texas and the U.S., whites are more than twice as likely to commit suicide than African Americans and Hispanics, and men commit suicide more often than women.⁹⁸ White males committed 60 percent of all suicides in Texas in 2000.⁹⁹



Dental Health

Tooth decay is one of the most preventable diseases. Regular oral hygiene such as flossing and brushing, coupled with a preventive dental program, can prevent tooth decay. A complete preventive dental program includes sealants, fluoride, and regular professional dental care.¹⁰⁰

Tooth Decay

No statewide data are currently available on the prevalence of *tooth decay* in Texas for adults or children. In 2001, the University of Texas Health Science Center at Houston Dental Branch (UTHSC) completed a dental study of children in seven counties around Houston. The study found that second graders had an average of 0.27 decayed, missing, or filled permanent teeth. Seventh graders had an average of 1.19 decayed, missing, or filled permanent teeth, and tenth graders had an average of 2.38 decayed, missing, or filled permanent teeth.¹⁰¹

Nationally, improvements have been noted over the past 25 to 30 years with regard to tooth decay among adults.¹⁰²

Dental Sealants

Dental sealants are thin plastic coatings applied to the chewing surfaces of the molars (back teeth). It is best if the sealant is applied soon after the molars have erupted, before the teeth have a chance to decay. For that reason, children between the ages of 5 and 15 benefit most from sealants.¹⁰³

There are no statewide studies of children with sealants in Texas. The UTHSC study mentioned above found the prevalence of dental sealants among all survey participants to be between 27.8 percent (Matagorda County) and 51.0 percent (Galveston County).¹⁰⁴

One national study found that 23 percent of all 8-year-olds had sealants.¹⁰⁵

Water Fluoridation

Fluoride works by stopping or even reversing tooth decay.¹⁰⁶ Fluoridation in the public water supply is the most equitable, cost-effective, and cost-saving method of delivering fluoride to the community.¹⁰⁷

In Texas, approximately 30 percent of Texas residents experience less than optimal levels of fluoridation.¹⁰⁸

In the United States in 2000, approximately 162 million persons, or 65.8 percent of the population served by public water systems, received optimally fluoridated water.¹⁰⁹

Last Dental Visit

Most dentists recommend routine teeth cleaning every 6 months and a more complete dental exam every year. According to the state and national Behavioral Risk Factor Surveillance Survey in 1999, 61.4 percent of Texas adults had visited a dentist in the past 12 months. Nationally, 68.1 percent of adults reported having visited a dentist in the past 12 months.¹¹⁰



Environmental Health

*Outdoor Air Quality*¹¹¹

Ground-level *ozone* is the primary ingredient of smog and can affect lung function and aggravate respiratory diseases such as asthma and bronchitis. Half the Texas population lives in urban areas designated as being in “nonattainment” under federal Environmental Protection Agency (EPA) regulations for ozone.

Carbon monoxide is produced by the incomplete combustion of fuels, mainly from transportation sources such as trucks and cars. El Paso is the only city in Texas with the “nonattainment” designation under EPA regulations for carbon monoxide.

Particulate matter includes dirt, dust, smoke, and a complex mixture of chemicals that are small enough to be inhaled and travel deep within the respiratory system, causing decreased lung function and cardiovascular disease and aggravating respiratory disease such as asthma. El Paso is the only area in the state with the “nonattainment” designation under EPA regulations for particulate matter.

Drinking Water Quality

More than 97 percent of public water systems in Texas met or exceeded the state and federal standards for bacteria in 2000 — an improvement since 1995, when 82 percent met standards.¹¹²

*Surface Water Quality*¹¹³

Texas Surface Water Quality Standards set out explicit water quality targets for individual bodies of water. The standards protect surface water uses, including maintenance of aquatic life, recreation, water for public supplies, and others. If water quality in a river basin or estuary segment is determined not to meet a state water quality standard, then it is considered “impaired.” For the assessed waters in 2000, 30 percent of stream miles, 38 percent of estuary areas, and 38 percent of reservoir areas were impaired.



Purpose of the Report

Since September 11, 2001, many Texans and others around the world have considered what protections are in place to address the threat of highly infectious and deadly diseases such as anthrax or smallpox. In the United States, federal, state, and local lawmakers have looked to government entities such as law enforcement, fire departments, and public health departments for expertise in emergency preparedness and disaster management. Public health experts around the country have responded to the challenge with shared expertise, revised protocols, and improved infrastructure.

While terrorism and bioterrorism are in the forefront of recent headlines, the work of public health professionals to protect, promote, and improve the health of populations has been going on for more than a century in one form or another. Recent events have made Americans even more aware of how issues of health are constantly changing and require an interdisciplinary and community-wide approach — whether the community is a neighborhood or a vast state like Texas.

Although the Texas Department of Health (TDH) plays a key role in providing leadership and planning for the Texas public health system, additional components of the system include local governments and health departments, lawmakers, other state agencies, community health centers, individual doctors, schools, nonprofit organizations, hospitals, churches, and research universities, among others. Each of these components plays a necessary role in protecting, promoting, and improving the health of the public. The information in the report will focus health improvement discussions among the public health stakeholders.

The purpose of this report is to provide the background information needed to begin a process of partnering across Texas to develop and reach milestones along the path to a culture of health. As the state's public health agency, TDH envisions that we can provide the leadership and planning to realize Texas health goals and make measurable improvements in the public's health by coordinating the efforts of state and local organizations and individuals. The Commissioner of Health will convene a broad-based stakeholder steering committee following the publication of this report to establish Texas health improvement goals that all partners will jointly take responsibility for developing and reaching.

The steering committee will also address the findings of a second TDH report to be published in August 2002 — the *Public Health Improvement Plan: Texas State Strategic Health Plan Part II*. The *Public Health Improvement Plan* addresses the need for a coordinated public health system. The steering committee will also establish goals for making improvements in the public health system.

Key Concepts

Shared awareness is the first step to shared understanding. Key concepts commonly held by public health practitioners are important for understanding the information presented here. **Health** is a state of physical, mental, and social well-being and not merely the absence of disease or infirmity.¹

The health of individuals and the population is determined by a variety of interacting factors: genetic predisposition, access to health care, environmental factors, and individual choices. Public health practice



works to improve health and reduce disease in the population by developing interventions that target these factors. Traditionally, **public health practice** comprises the “activities that society undertakes to assure the conditions in which people can be healthy ... [including] organized community efforts to prevent, identify, and counter threats to the health of the public.”² Health is described throughout the report in terms of **health indicators** — measurements that describe a population’s health status. A particular area of emphasis throughout this report is on the individual choices that adversely affect well-being or **health risk behaviors** such as smoking, abusing alcohol, or engaging in high-risk sexual behaviors.

Health disparities are the differences in the presence of disease, health outcomes, risk factors, or access to care within a specific population compared to other populations.³ Health disparities exist among various demographic groups in Texas, including differences that occur related to gender, race/ethnicity, education or income, and geographic location. Understanding health disparities is important in planning effective intervention strategies that improve the health of specific populations.

Throughout this report, the major **racial/ethnic groups** in Texas — white, African American, and Hispanic — will be discussed. “White” refers to non-Hispanic whites. “African American” refers to non-Hispanic African Americans. “Hispanic” refers to persons of Hispanic national origin or ethnicity who may be of any race. The three racial/ethnic groups are mutually exclusive in the statistics noted. In some instances, data are only available for the Mexican-American subset of Hispanics, and this is noted.

The statistics are quoted in different terms depending on what data are available or which data are more informative. Some data are discussed in terms of the number of existing cases of a disease or health condition in a population at a certain time (**prevalence**), such as the number of HIV/AIDS cases in the Texas population in 2001. Some data are discussed in terms of the rate of development of the disease or health condition in a certain time period (**incidence**), such as the number of new chlamydia cases contracted in Texas in 2001.

Note About the Selected Health Status Indicators

TDH wants to engage our partners in public health practice —to assure the conditions in which people can be healthy. The cornerstone for this assurance is to identify the key health threats. The process for deciding which health threats to focus on in this report included a number of steps. We reviewed what other states focused on in reports they published with similar goals. We consulted TDH program experts and experts from other state agencies. We asked for feedback from local health department directors. As the endnotes reveal, many written sources were consulted. In addition, we considered health status indicators that have been identified at the national and county level.

Texas has done some important work toward establishing health status indicators at the county level. In February 2001, the Texas Association of Local Health Officials (TALHO) adopted a set of Texas Strategic Health Status Indicators that are available at the county level in all 254 Texas counties and that are useful to county leaders in identifying the health problems of their communities. The list of TALHO indicators is attached in the Appendix (more information can be obtained at <<http://www.tdh.state.tx.us/talho/>>). Most of the TALHO indicators are a part of this report. Because this report focuses on the state level (as opposed to the county-level focus of the TALHO indicators), additional issues could be addressed that have an important impact on health statewide but for which county-level data are not available.

On the national level, the Centers for Disease Control and Prevention (CDC) led a process to establish health status indicators and set goals for the year 2010. CDC’s *Healthy People 2010* identified two



overarching goals: to increase the quality and years of healthy life, and to eliminate health disparities.⁴ In order to achieve these goals in 2010, public health professionals from across the country identified objectives for improved health status in 28 focus areas. Much of the data concerning Texas' current health status in this report can be compared to *Healthy People 2010* objectives to check Texas' progress toward a nationally established set of benchmarks.

It is important to note that the list of health conditions in this report does *not* represent a consensus list of statewide health status indicators. Rather, this report is an attempt to capture available data on major health issues and emerging threats that can spark interest and mobilize action. Reviewer comments on this report expressed concern about issues left unaddressed, such as the particular health challenges of persons with disabilities, more detail on birth defects, information on public health activities such as general sanitation and vector control, and others. In future iterations of this report or related materials, we look forward to addressing other measures of health status and providing more detail on some of those identified here. We look to our partners to do the same.

Limitations

The broad-based definition of *health* above is the one contemplated throughout this report. However, the focus of the report is particularly on physical and mental illnesses and the risk behaviors that can lead to those physical and mental illnesses. While social well-being affects risk behaviors and the course of disease, social well-being is not explored in depth.

To the extent possible, this report notes disparities in health among different racial/ethnic population groups, males and females, and different age groups in Texas. While Texas covers a vast geographic area, and populations in different parts of the state face different health challenges, this report attempts to describe the health of Texans in general and does not focus on particular geographic differences.

The decision to focus on the three major racial/ethnic groups in Texas is a limitation of this report. The decision was made for a number of reasons. First, data availability was key. Although some important research has been conducted into health issues among Asian Americans or Native Americans, for example, generally data are lacking for a systematic, overall health report such as this one. Second, the population of persons who are not in the three major racial/ethnic groups in Texas is relatively small (approximately 686,000 of nearly 21 million Texans).

No new data collection was initiated for this report. The report is based on available data that were sorted to fulfill the needs of the report. There are some gaps in information where data were not readily available.

The data cited raise as many questions as they answer. The data give us good statistical estimates of what risk behaviors Texans engage in, what diseases Texans suffer from, and what Texans die from. Every attempt was made to use the most reliable data available from state and national sources. However, the data are always limited by the particulars of the data collection. For example, much of the data used comes from the Behavioral Risk Factor Surveillance Survey (BRFSS). However, the BRFSS is a telephone-based survey that necessarily does not reach people without telephones.

It is important to realize that the data describe the health of Texans in aggregate. The data do not provide a picture of any individual's health. For example, a single person may have diabetes, heart disease, and hepatitis C and therefore contribute to the count for each disease. On the other side of this issue, a person may have a disease but it may not be diagnosed or, if diagnosed, it may not be reported.



Perhaps the most important question left unanswered by the data is *why*. Why do many people adopt behaviors that put their health and even their life at risk? Why do different racial/ethnic groups, different age groups, and men and women have significantly different health experiences in many instances? Then there is the key *how* question. How can public health leaders encourage individuals and communities to adopt healthier behaviors? Answers to these questions are difficult and multifaceted, but the costs of leaving them unanswered are considerable in terms of human suffering and economic impact. A coordinated approach to creating a culture of health is the best chance to get the answers right and put those answers into practice.



A fact that bears repeating in considering the health of Texans is that Texas and Texans are diverse. Texas has vast open spaces and sparsely populated counties. Texas also has some of the largest urban centers in the country. Texans are white, African American, Hispanic, Asian, Native American, and many other racial or ethnic groups. Texas borders four other states — and a foreign country with its own economic and health challenges. Many Texans enjoy considerable prosperity and ready access to health care while many others struggle to make ends meet and often have no access to basic health services. In this chapter, some salient facts that help paint a broad picture of Texas will be provided as a backdrop to the more topical health issues that follow.

Demographics

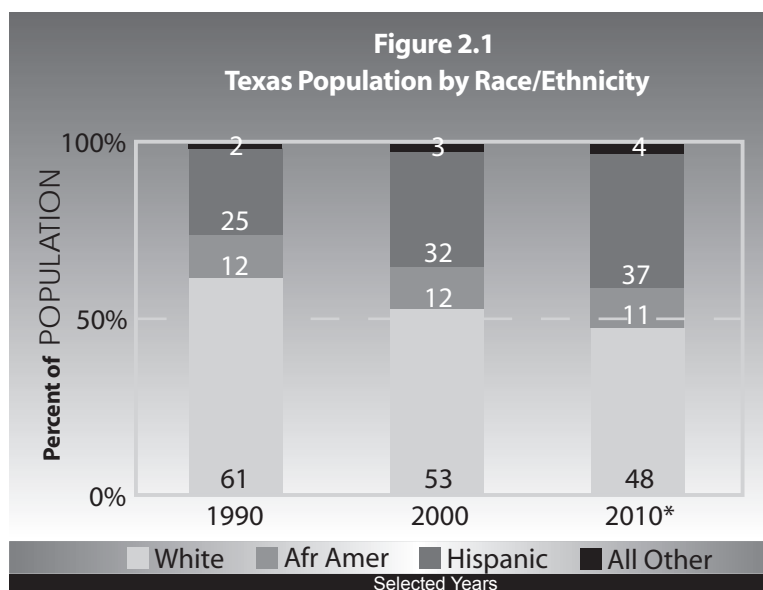
According to the 2000 U.S. Census, Texas had the second largest population of all states (behind California) — with approximately 20.9 million residents.¹

- Approximately 11.1 million Texans were white.
- Approximately 6.7 million Texans were Hispanic.
 - ▼ Of the 6.7 million Hispanics in Texas in 2000, more than five million (76 percent) were of Mexican origin.²
- Approximately 2.4 million Texans were African American.
- Other racial or ethnic groups comprised the remaining approximate 686,000 Texans.

As illustrated in Figure 2.1, from 1990–2010 Texas has changed demographically, and will continue to, in significant ways:

- Whites will be less than a majority of the population by 2010 — possibly as early as 2006, according to current projections.³
- Between 1990 and 2010, Texas whites will decrease as a percentage of the total population, Hispanics will increase, and African Americans will remain relatively stable.⁴





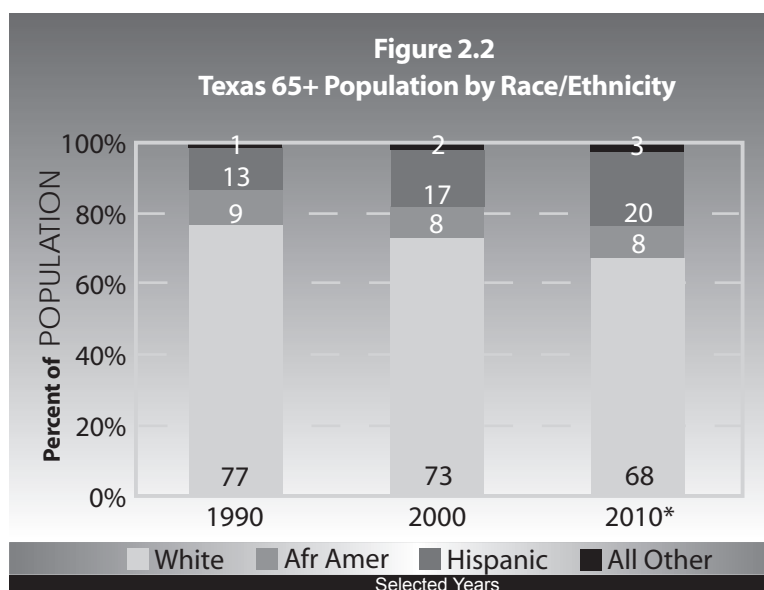
Source: Texas State Data Center.

*Data for 2010 are based on migration growth scenario 0.5 projections. December 2001.

Texas age-related data

More Texans are living longer. Texans age 65 and older will continue to be an important consideration in health planning because the elderly are disproportionate users of health care services in comparison to other age groups.⁵ Some important trends in Texas aging include:

- In 1990, 1.7 million of 17 million Texans were aged 65 and older. By 2010, 2.5 million of 24.2 million Texans will be 65 or older.⁶
- Women make up the majority of the population age 75 and older — 65 percent in 1990, 63 percent in 2000, and a projected 61 percent in 2010.⁷
- As illustrated in figure 2.2 below, the racial/ethnic makeup of Texas' elderly is becoming increasingly Hispanic.⁸

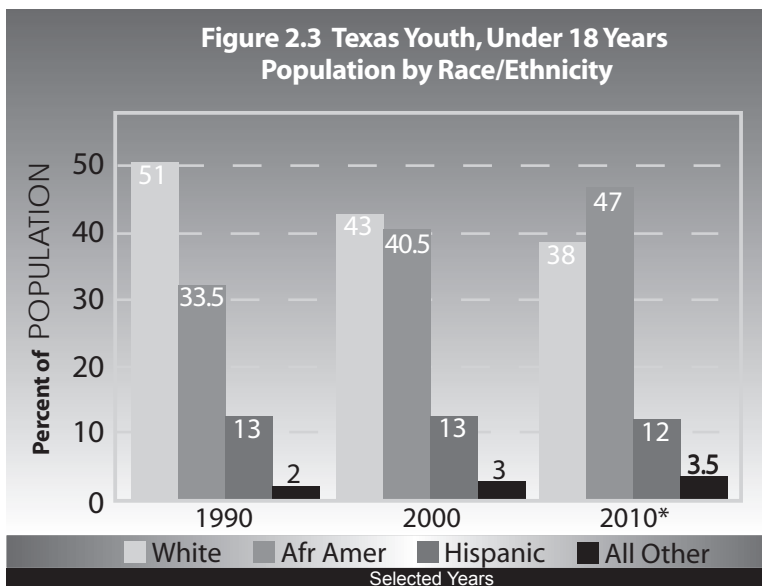


Source: Texas State Data Center.

*Data for 2010 are based on migration growth scenario 0.5 projections. December 2001.



As illustrated in figure 2.3, white youth are already less than 50 percent of the youth population. The percentage of Texas youth classified as Hispanic is increasing.⁹



Source: Office of the State Demographer, Texas State Data Center.

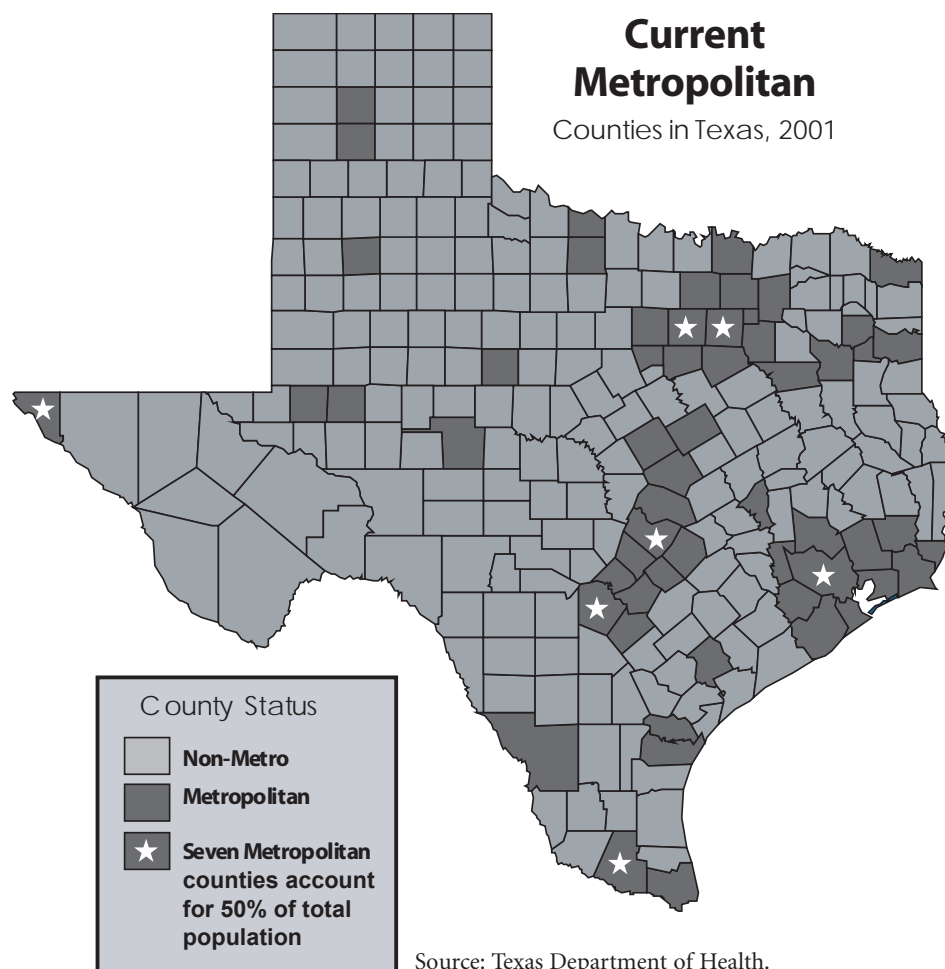
*Data for 2010 are based on migration growth scenario 0.5 projections. December 2001.

Texas population location

- In 1990 approximately 83 percent of Texas' population lived in metropolitan areas. In 2010, approximately 86 percent of the population will live in the 58 counties currently designated as metropolitan.¹⁰
- The seven largest metropolitan counties — Bexar, Dallas, El Paso, Harris, Hidalgo, Tarrant, and Travis — together account for half of the total Texas population.¹¹
- During the decade of the 1990s, the metropolitan growth rate of 22.7 percent was four times the growth rate for non-metropolitan counties in Texas. Population projections favor moderated increases for the period 2000–2010 of 17.4 percent for the current metropolitan counties versus 7.7 percent for the rest of the state.¹²
- Figure 2.4 gives a picture of Texas' population concentration.



Figure 2.4



Poverty data

Poverty is a condition in which individuals or families do not have sufficient income to pay for their basic needs. In the U.S., the federal government establishes the federal poverty level (FPL), revising it annually to account for changes in the cost of living as measured by the Consumer Price Index that occurred during the previous year. The federal government then publishes a list containing the national poverty income guidelines. For example, for a family of four, the FPL for 2000 (based on annual income) was \$17,650 and for a family of three the FPL was \$14,630.¹³

- In Texas in 2000, 14.7 percent of the population (3.1 million people) was living below the FPL. The recent high poverty level in Texas was 19.1 percent of Texans living below the FPL in 1994 (3.6 million people).¹⁴
- ▼ In contrast, in the U.S. in 2000, 11.3 percent of people lived below the FPL. This percentage is not statistically different from the record national low of 11.1 percent of people living below the FPL in 1973.¹⁵



- Table 2.1 provides a comparison of Texas and U.S. data for persons living below the FPL in 2000, by race/ethnicity and age group.

| Table 2.1 Comparison of Texas and U.S. Data for Persons Living Below the Federal Poverty Level in 2000 By Race/Ethnicity and Age | | |
|--|---------------------------|--------------------------|
| | Texas¹⁶ | U.S.¹⁷ |
| Whites | 7.6% | 7.5% |
| African Americans | 24.3% | 22.1% |
| Hispanics | 23.% | 21.2% |
| All Persons under 18 years | 20.9% | 16.2% |
| All Persons 65 years and older | 13.2% | 10.2% |

Source: Texas Department of Health.

- Hispanics and African Americans in Texas make up a disproportionate share of Texans living in poverty as compared to their share of the overall population. In 2000, Hispanics accounted for about 32 percent of the state's population but accounted for almost 53 percent of Texans living in poverty. African Americans in 2000 made up 11 percent of the state's population but accounted for 18 percent of Texans living in poverty. Whites were 53 percent of the Texas population in 2000 and accounted for 29 percent of Texans living in poverty.¹⁸
- In the year 2000, children under age 18 accounted for 28 percent of the state's population but accounted for about 42 percent of the poverty population.¹⁹

Access

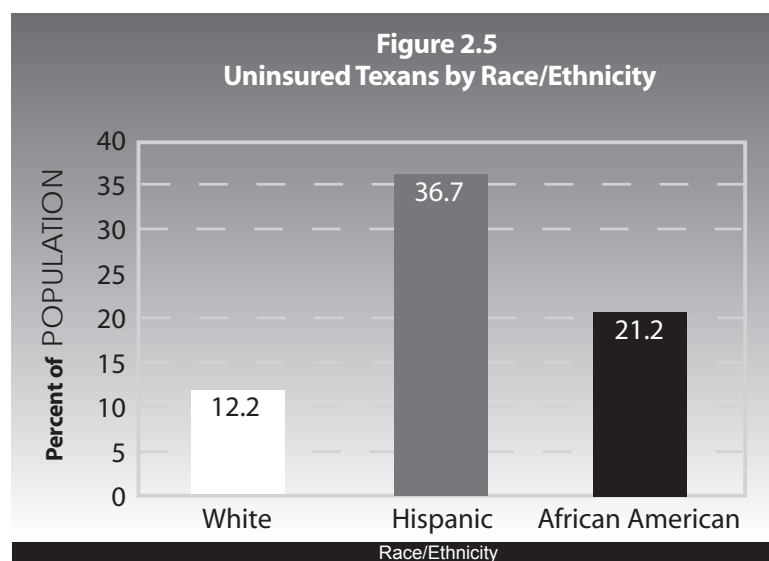
The focus of this report is on the population-wide health of Texans. This population-wide perspective does not focus on individuals and their health-care needs. However, it is crucial to recognize that individuals make up a population and make health decisions that impact the population's health. Individuals also have varying degrees of opportunity to access adequate health care depending on their income, place of residence, culture and language, and other factors. Many Texans struggle for access to appropriate health care and many also struggle with the consequences of inadequate care. The discussion that follows highlights a few barriers to health care experienced by some Texans.



Uninsured

Many Texans do not have either public or private health insurance. Below is a summary of some statistics related to the uninsured in Texas:²⁰

- In 2000, 21.4 percent of Texans lacked health insurance. Texas was behind only New Mexico (23.8 percent) in the percentage of residents uninsured.
- ▼ Nationwide in 2000, 14 percent of Americans were uninsured.²¹
- Over the ten-year period from 1989 to 1999, the percentage of the Texas population lacking health insurance remained relatively constant (24.5 percent in 1989, 25.7 percent in 1999, high of 27.0 percent in 1995).²²
- As illustrated in figure 2.5, in 2000, 12.2 percent of white Texans, 21.2 percent of African Americans, and 36.7 percent of Hispanics lacked health insurance. Hispanics made up 57.6 percent of the uninsured population overall in Texas.



Source: U.S. Census Bureau, March 2001, Current Population Survey for Texas.

- More than 22 percent (22.5) of Texas males and 20.3 percent of females lacked health insurance in 2000.
- For Texans under age 18, 21.2 percent lacked health insurance in 2000.
- The 18–24 age group had the highest uninsured rate (38.7 percent uninsured) in 2000 in Texas. The 25–34 age group had an uninsured rate of 26.7. The lowest uninsured rate was for the 65-and-older age group because of the federal Medicare program.
- Working Texans had an uninsured rate of 21.5 in 2000. Working Texans made up 68.7 percent of the uninsured in Texas.



Other significant issues

Some parts of Texas lack hospital services. Of 254 counties in Texas, 63 counties lacked an acute care hospital and another 124 counties had one acute care hospital in 2001.²³ In addition, 47 counties (41 rural counties) with acute care hospitals did not provide obstetrics services, and 56 counties (37 rural counties) with acute care hospitals did not provide certified trauma services.²⁴

There are 88 counties in Texas that have only minimal emergency medical service (EMS) capability and two counties with no EMS coverage. Most rural counties and all sparsely populated counties in Texas rely on volunteer EMS systems. There has been an increasing shortage of rural EMS volunteers in Texas.²⁵

Texas experiences shortages of health professionals in many areas. The state and federal governments work together to identify acute shortages of health care personnel in geographic areas, population groups, and facilities, and to designate them as Health Profession Shortage Areas (HPSA). Designation as a HPSA entitles an area to certain potential benefits, such as possible assignment of a National Health Service Corps scholar to work in a designated area, awarding of state or federal loan-repayment programs to health professionals who agree to practice in HPSAs, granting of prescriptive authority to physician assistants and nurse practitioners, and eligibility for placement of a Rural Health Clinic in the designated area. Because of Texas' high poverty levels, its many sparsely populated areas, and its chronic shortages of health professionals in rural and some inner-city areas, there are large numbers of HPSA designations in the state.²⁶

- In 2001 in Texas, there were 129 whole county geographic areas designated as primary care HPSAs and 63 partial county areas designated as primary care HPSAs.
- In 2001, there were 75 whole county geographic areas designated as dental care HPSAs and 26 partial county areas.
- In 2001, there were 180 whole county geographic areas designated as mental health HPSAs and 14 partial county areas.
- Since 1990, the number of primary care, dental, and mental health HPSAs have all increased markedly.

Causes of Death

A total of 149,763 Texas residents died in 2000. As represented in the comparison table (Table 2.2), the five leading causes of death in Texas represented 68.0 percent of all deaths in 2000. Diseases of the heart and cancer have been the first and second leading causes of death in Texas and the nation since 1950. Some additional detail regarding causes of death in 2000 in Texas include:²⁷

- Although homicide was not one of the ten leading causes of death among all Texas residents, it was the seventh leading cause among Hispanics and eighth among African Americans.



- Although males represented slightly less than half (49.4 percent) of the Texas population in 2000, they accounted for 60.1 percent of all deaths to persons younger than 75. Much of this difference is due to the greater likelihood of males dying younger from external causes (such as accidents, homicide, and suicide) and HIV infection.

**Table 2.2 Top Ten Causes of Death
Texas and U.S. Comparison**

| Ranking | Texas (2000 data)²⁸ | U.S. (1999 data)²⁹ |
|----------------|---------------------------------------|--|
| 1 | Diseases of the heart | Diseases of the heart |
| 2 | Cancer | Cancer |
| 3 | Stroke | Stroke |
| 4 | Accidents (unintentional injuries) | Chronic lower respiratory diseases |
| 5 | Chronic lower respiratory disease | Accidents (unintentional injuries) |
| 6 | Diabetes | Diabetes |
| 7 | Influenza and pneumonia | Influenza and pneumonia |
| 8 | Alzheimer's disease | Alzheimer's disease |
| 9 | Suicide | Nephritis, nephrotic syndrome nephrosis |
| 10 | Chronic liver disease and cirrhosis | Septicemia |

Source: Texas Department of Health.

Table 2.3 compares the top ten leading causes of death in Texas and the U.S. for the three major racial/ethnic groups. Most of the causes of death in the table are discussed in more detail in the following chapters. The most current data available for Texas are for 2000 and the most current data available for the U.S. are 1999.



**Table 2.3 Leading Causes of Death by Race/Ethnicity,
Texas (2000) and U.S.(1999)**

| Leading Causes of Death (as % of total deaths in race/ethnic category) | TX | U.S. | TX | U.S. | TX | U.S. |
|---|---|---|---|---|--|---|
| | Whites³⁰ | Whites³¹ | Afr. Amer.³² | Afr. Amer.³³ | Hispanics³⁴ | Hispanics³⁵ |
| 1 | Diseases of the heart (29.8%) | Diseases of the heart (31.1%) | Diseases of the heart (28.4%) | Diseases of the heart (27.6%) | Diseases of the heart (24.0%) | Diseases of the heart (24.9%) |
| 2 | Cancer (22.8%) | Cancer (23.4%) | Cancer (22.3%) | Cancer (21.8%) | Cancer (19.5%) | Cancer (21.8%) |
| 3 | Stroke (7.4%) | Stroke (7.1%) | Stroke (7.3%) | Stroke (6.6%) | Accidents (unintentional injuries) (8.0%) | Stroke (6.6%) |
| 4 | Chronic lower respiratory diseases (5.8%) | Chronic lower respiratory diseases (5.7%) | Accidents (unintentional injuries) (4.6%) | Accidents (unintentional injuries) (4.4%) | Diabetes (6.9%) | Accidents (unintentional injuries) (4.4%) |
| 5 | Accidents (unintentional injuries) (4.5%) | Accidents (unintentional injuries) (3.8%) | Diabetes (4.3%) | Diabetes (4.2%) | Stroke (6.2%) | Diabetes (4.2%) |
| 6 | Influenza and Pneumonia (2.6%) | Influenza and Pneumonia (2.8%) | Chronic lower respiratory diseases (2.8%) | Chronic lower respiratory diseases (2.8%) | Chronic liver disease and cirrhosis (3.2%) | Chronic liver disease and cirrhosis (2.9%) |
| 7 | Diabetes (2.6%) | Diabetes (2.5%) | HIV (2.5%) | HIV (2.7%) | Assault (homicide) (2.2%) | Homicide (2.8%) |
| 8 | Alzheimer's disease (2.5%) | Alzheimer's disease (2.1%) | Assault (homicide) (2.0%) | Homicide (2.7%) | Influenza and Pneumonia (2.2%) | Chronic lower respiratory diseases (2.8%) |
| 9 | Suicide (1.5%) | Nephritis, nephrotic syndrome, and nephrosis (1.4%) | Influenza and Pneumonia (1.9%) | Nephritis, nephrotic syndrome, and nephrosis (2.4%) | Chronic lower respiratory diseases (2.0%) | Influenza and pneumonia (2.2%) |
| 10 | Septicemia (1.2%) | Suicide (1.3%) | Nephritis, nephrotic syndrome, and nephrosis (1.9%) | Influenza and pneumonia (2.1%) | Septicemia (1.5%) | Certain conditions originating in the perinatal period (2.1%) |

Source: Texas Department of Health.



Over the past half century, the public health community has increasingly realized that personal lifestyle choices have a strong influence on health. Fifty years ago, public health focused on mobilizing resources to protect the population against external threats such as the spread of infectious microbial and viral agents. In subsequent decades, research revealed that routine decisions people make in their day-to-day living could minimize or significantly reduce their risk for unnecessary death and disability.

For example, a groundbreaking 1993 article by McGinnis and Foege found that the most prominent “actual” causes of death in the U.S. are tobacco use, diet and activity patterns, and alcohol consumption (Table 3.1).¹ In Texas, each of the seven leading causes of death can be linked to one or more significant behavioral risk factors (Table 3.2). Understanding these risks and how they affect health is a necessary first step for improving the health of Texans.

**Table 3.1 Estimated Number of Deaths
by Actual Cause, U.S., 1990**

| Cause | Estimated Deaths | Percentage of Total Deaths |
|----------------------------|------------------|----------------------------|
| Tobacco | 400,000 | 19 |
| Diet and Activity Patterns | 300,000 | 14 |
| Alcohol | 100,000 | 5 |
| Microbial Agents | 90,000 | 4 |
| Toxic Agents | 60,000 | 3 |
| Firearms | 35,000 | 2 |
| High Risk Sexual Behavior | 30,000 | 1 |
| Motor Vehicles | 25,000 | 1 |
| Illicit Drug Use | 20,000 | 1 |
| Total | 1,060,000 | 50 |

Source: J. Michael McGinnis and William H. Foege, “Actual Causes of Death in the United States,” *JAMA*, 270.18 (Nov. 10, 1993): 2207–12.



**Table 3.2 Behavioral Risk Factors
Associated with Leading Causes of Death, Texas, 1999**

| Rank | Cause of Death | Number of Deaths | Rate Per 100,000 Estimated Population | Associated Risk Factors |
|--------------------------------------|--------------------------|------------------|---------------------------------------|---|
| 1 | Heart Disease | 43,335 | 216.7 | smoking, lack of physical activity, high blood pressure, diet, high blood cholesterol, overweight |
| 2 | Cancer | 32,703 | 163.6 | smoking, diet, chronic drinking, environmental exposure |
| 3 | Cerebrovascular Disease | 10,395 | 52.0 | high blood pressure, smoking, high blood cholesterol, diet, lack of physical activity |
| 4 | Pulmonary Disease | 7,513 | 37.6 | smoking, environmental exposure |
| 5 | Unintentional Injury | 7,188 | 35.9 | binge and chronic drinking, smoking, not using safety belts |
| 6 | Diabetes | 4,925 | 24.6 | overweight, diet, lack of physical activity |
| 7 | Phneumonia and Influenza | 3,527 | 17.6 | smoking |
| 8 | Alzheimer's Disease | 2,825 | 14.1 | head injury |
| 9 | Chronic Liver Disease | 2,097 | 10.5 | binge and chronic drinking |
| 10 | Suicide | 2,002 | 10.0 | unknown |
| Total Leading Causes of Death | | 116,510 | 582.6 | |
| Total All Causes of Death | | 146,649 | 733.4 | |

Source: Texas Department of Health, Bureau of Vital Statistics and Office of Health Information and Analysis.

In a recent article in the *Journal of the American Medical Association*, David Nelson et al. explained that it is now well-established that morbidity and premature mortality can be reduced by changing unhealthy, modifiable risk factors and receiving appropriate clinical preventive services. Population-based monitoring of health trends, including behavior — the authors argue — is a key assessment function to inform public health policy-making, and the Behavioral Risk Factor Surveillance System (BRFSS) is an excellent data source for assessing these statewide trends.²

In 1984, the Centers for Disease Control and Prevention (CDC) established the BRFSS to collect and analyze information on adult behavioral risk factors. The largest telephone survey in the world, BRFSS is now used in all 50 states, the District of Columbia, and three territories. The surveys, administered annually through a federal-state partnership, pose questions relating to health status, personal health habits, and the use of preventive health services. Texas has participated since 1987.



Recognizing that unhealthy behavior patterns often emerge in childhood, the CDC also developed the Youth Risk Behavior Surveillance System (YRBSS) to monitor priority health-risk behaviors among high school students. The year 2001 was the first in which Texas was able to achieve an adequate rate of response to the survey from schools and students to obtain a statistically representative sample.

The BRFSS and YRBSS sustain local, state, and national efforts to reduce behaviorally influenced morbidity and mortality. Together, these surveys provide valuable information that public health authorities can use to identify major health risks, design effective interventions, set worthwhile and achievable goals, and measure progress toward those goals. The chapter that follows draws on BRFSS and YRBSS data, as well as other related data where appropriate, to highlight Texas and national performance on key behavioral risk factors in the areas of smoking, overweight and obesity, physical activity, alcohol and substance abuse, use of preventive health services, and sexual behavior.

Cigarette Smoking

Cigarette smoking and the use of other tobacco products take an enormous toll on Texas and the United States. Tobacco kills an estimated 440,000 Americans and 24,000 Texans each year — more than alcohol, motor vehicle crashes, AIDS, drugs, homicides, suicides, and fires combined.³ Cigarette smoking has long been linked to many chronic diseases, including heart disease, stroke, lung and other cancers, and chronic lower respiratory disease.

Researchers are now discovering that tobacco use poses a very real threat to the health of nonsmokers. According to a CDC study, nine out of every 10 nonsmoking Americans are exposed to secondhand smoke, a known human carcinogen estimated to be responsible for 3,000 deaths from lung cancer in the U.S. each year.⁴ Secondhand smoke also contributes to heart disease, exacerbates asthma and bronchitis, and may increase the risk for Sudden Infant Death Syndrome (SIDS).⁵

Adult smoking⁶

Table 3.3 shows smoking prevalence by race/ethnicity, gender, and age for the Texas adult population and compares these results to the median* national performance of 50 states, Puerto Rico, and the District of Columbia. A current smoker is defined as a person who reports, on the BRFSS, having smoked at least 100 cigarettes in his or her lifetime and currently smokes every day or on some days.

- More than one of every five Texas adults currently smokes.
- The overall prevalence of smoking among Texas adults does not differ statistically from the national median.
- Both nationally and in Texas, among adults, whites are more likely to smoke than African Americans and Hispanics, males are more likely to smoke than females, and young adults are more likely to smoke than older adults.

*Median is defined as the value of the middle case in a rank-ordered set of observations. When the number of observations is an even number, — for example, a data set of 50 states, Puerto Rico, and the District of Columbia — the median is the arithmetic average of the two middle cases.



Table 3.3 Smoking Prevalence by Race/Ethnicity, Gender, and Age, Texas and U.S., 2000

| | % Current Texas Smokers | U.S. Median* |
|-----------------------|--------------------------------|---------------------|
| Adults | 22.1 | 23.2 |
| Race/Ethnicity | | |
| White | 23.9 | 23.0 |
| African American | 16.3 | 22.8 |
| Hispanic | 19.7 | 21.9 |
| Gender | | |
| Male | 25.4 | 24.4 |
| Female | 18.9 | 21.2 |
| Age | | |
| 18–24 | 27.1 | 31.0 |
| 25–34 | 22.5 | 26.6 |
| 35–44 | 23.7 | 27.4 |
| 45–54 | 24 | 24.1 |
| 55–64 | 22 | 19.9 |
| 65 + | 11.2 | 9.7 |

Source: Texas Department of Health, Texas Behavioral Risk Factor Surveillance System, 2000.

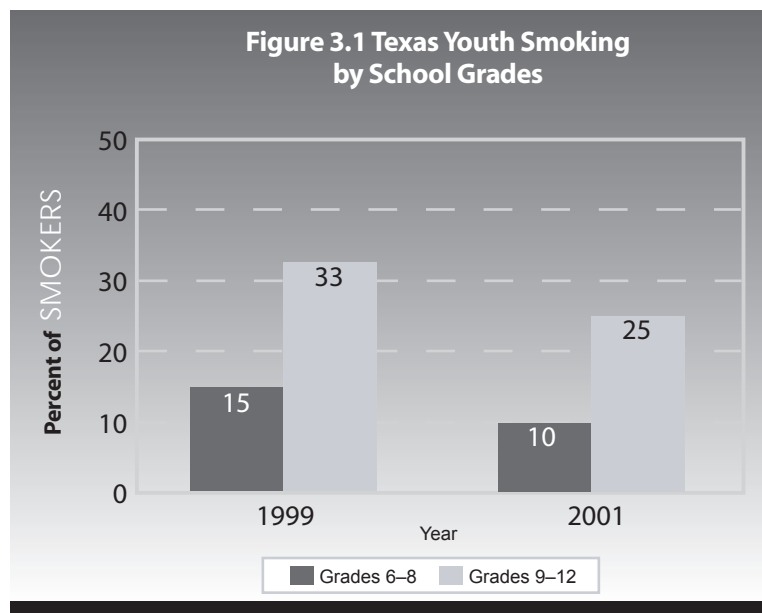
*U.S. median based on observations from 50 states, Puerto Rico, and the District of Columbia.

Texas data: youth smoking⁷

To assist states in developing and maintaining their state-based comprehensive tobacco prevention and control programs, CDC developed the Youth Tobacco Surveillance and Evaluation System, which includes international, national, and state school-based surveys of middle and high school students. The national Youth Tobacco Survey is representative of students in 50 states and the District of Columbia. It was first conducted during fall 1999 and then again during spring 2000. The survey will now be conducted every other year.

In the 2001 Texas Youth Tobacco Survey, students were asked if they had smoked cigarettes on one or more of the 30 days preceding the survey (“current cigarette use”). Overall, 10 percent of Texas middle school students and 25 percent of Texas high school students smoked cigarettes on at least one of the 30 days preceding the survey. In 1999, 15 percent of Texas middle school students and 33 percent of Texas high school students reported current cigarette use. See Figure 3.1.





Source: Texas Department of Health, Texas Youth Tobacco Survey.

Racial/ethnic differences: middle school (Texas)

Survey data show that Hispanic students were significantly more likely than white or African American students to be current smokers of cigarettes.

- Among whites, the prevalence of current cigarette smoking decreased from 13 percent in 1999 to 8 percent in 2001.
- Among African Americans, the prevalence of current cigarette smoking decreased from 16 percent in 1999 to 7 percent in 2001.
- Among Hispanics, the prevalence of current cigarette smoking decreased from 19 percent in 1999 to 14 percent in 2001.

Racial/ethnic differences: high school (Texas)

White and Hispanic students were significantly more likely than African American students to be current smokers of cigarettes as shown by results of the 2001 survey.

- Among whites, the prevalence of current cigarette smoking decreased from 37 percent in 1999 to 27 percent in 2001.
- Among African Americans, the prevalence of current cigarette smoking decreased from 16 percent in 1999 to 14 percent in 2001.
- Among Hispanics, the prevalence of current cigarette smoking decreased from 35 percent in 1999 to 27 percent in 2001.

Gender differences: middle school (Texas)

The prevalence of current cigarette smoking is greater among male than among female students in middle school.



- Among males, the prevalence of current cigarette smoking decreased from 15 percent in 1999 to 11 percent in 2001.
- Among females, the prevalence of current cigarette smoking decreased from 15 percent in 1999 to 9 percent in 2001.

Gender differences: high school (Texas)

Male students were more likely than female students to be current users of cigarettes in high school.

- Among males, the prevalence of current cigarette smoking decreased from 34 percent in 1999 to 28 percent in 2001.
- Among females, the prevalence of current cigarette smoking decreased from 31 percent in 1999 to 21 percent in 2001.

National data: youth smoking⁸

National data taken from the 2000 national Youth Tobacco Survey showed 11.0 percent of U.S. middle school students reporting current cigarette use. Among the three major racial/ethnic groups, 10.8 percent of white students, 11.2 percent of African American students, and 11.4 percent of Hispanic students were current cigarette smokers.

In 2000, 28.0 percent of U.S. high school students reported current cigarette use. White students (31.8 percent) were more likely than Hispanic (22.6 percent) and African American (16.8 percent) students to currently smoke cigarettes.

Notes on the costs of smoking⁹

New estimates released from the CDC detail the human and economic burden tobacco puts on Texas. These estimates are attributable to cigarette smoking only and do not take into account deaths from other causes, such as cigar and pipe smoking, smokeless-tobacco use, exposure to secondhand smoke, and fires. Productivity costs do not account for loss of work from smoking-related disability, excess absenteeism and work breaks, and death and illnesses related to secondhand smoke.

Human costs

- Tobacco use remains the number one preventable cause of death and disease in the nation, killing over 440,000 people each year.
- 24,000 Texans lose their lives to tobacco each year.

Economic costs

- Texas spends an estimated \$4.5 billion — or \$227.99 per person — annually on direct medical expenditures attributable to smoking.
- Fifteen percent of all Medicaid expenditures (\$1,265,000,000 or \$543.87 per recipient) were spent on smoking-related illnesses and diseases.



- Pregnancy complications due to smoking cost Texas an estimated \$17.7 million.

Productivity costs

- Another \$271 per capita — or a total of \$5.4 billion — is spent on lost productivity due to tobacco use.
- \$2.3 billion is attributable to cancers, \$2.4 billion to cardiovascular diseases, and \$6.9 million to respiratory diseases.

Grand total

- Tobacco costs the state of Texas over \$10 billion annually or \$499 for every person in the state (including nonsmokers and the young).

Overweight and Obesity

Overweight and obesity, together with poor diet and physical inactivity, are the second leading cause of preventable mortality and morbidity in the United States, accounting for nearly 300,000 deaths each year along with economic costs that rival those attributed to smoking.¹⁰ This grim picture is only likely to worsen, as the CDC reports that the nation is in the grip of a growing obesity “epidemic” that is spreading rapidly across all states, regions, and demographic groups in the United States, threatening the health of millions of Americans.¹¹

The National Heart, Lung, and Blood Institute defines a person with a body-mass index (BMI) of 25.0–29.9 as overweight and a BMI of 30.0 or greater as obese.¹² BMI is a common measure expressing the relationship of weight to height. BMI is highly correlated with the ratio of lean body mass to fat and is a useful, though not infallible, indicator for overweight and obesity. On the BRFSS, BMI is calculated from self-reported height and weight.

*Adult overweight and obesity:*¹³

Table 3.4 helps to illustrate the extent to which overweight and obesity threaten the health of Texans and Americans:

- Nearly one out of every four adult Texans is considered obese, while six out of ten are at an unhealthy weight (overweight or obese). Statistically, Texans are more likely to be obese than the national median.
- Both nationally and in Texas, the rate of adult obesity nearly doubled between 1990 and 2000.
- Texas Hispanics are significantly more likely than Hispanics nationally to be obese (31 percent versus 22 percent). Within Texas, the highest rate of adult obesity is found among Hispanics.
- Nearly seven in 10 adult males in Texas are overweight or obese, compared to half of adult females.



Table 3.4 Overweight and Obesity by Race/Ethnicity, Gender, and Age, Texas and U.S., 2000

| | Texans % Overweight | U.S. Median* % Overweight | Texan % Obese | U.S. Median* % Obese |
|-----------------------|--------------------------------|--------------------------------------|--------------------------|---------------------------------|
| Adults | 36.7 | 36.7 | 23.1 | 20.1 |
| Race/Ethnicity | | | | |
| White | 37.5 | 36.7 | 19.7 | 18.8 |
| African American | 40.2 | 36.8 | 26.7 | 29.1 |
| Hispanic | 35.2 | 38.2 | 31.2 | 21.6 |
| Gender | | | | |
| Males | 45.4 | 45.1 | 24.0 | 20.6 |
| Females | 28.0 | 28.5 | 22.2 | 19.8 |
| Age | | | | |
| 18–24 | 28.1 | 26.3 | 12.8 | 11.4 |
| 25–34 | 35.3 | 34.9 | 25.4 | 18.2 |
| 35–44 | 36.9 | 38.0 | 30.4 | 21.1 |
| 45–54 | 38.7 | 39.5 | 32.9 | 24.3 |
| 55–64 | 43.2 | 40.3 | 27.1 | 26.3 |
| 65 + | 38.7 | 40.0 | 18.7 | 18.2 |

Source: Texas Department of Health, Texas Behavioral Risk Factor Surveillance System, 2000.

*U.S. median based on observations from 50 states, Puerto Rico, and the District of Columbia.

Youth overweight¹⁴

The Youth Behavioral Risk Surveillance System calculated BMI from self-reported height and weight and then applied it to reference data from the National Health and Nutrition Examination Survey to determine the percentage of students who were overweight. Overweight was defined as a BMI at or above the 95th percentile by age and gender (and therefore includes both overweight and obese youth).

- About 14 percent of Texas high school students were overweight or obese.
 - ▼ Nationally, 10.5 percent of high school students were overweight or obese.
- Overall in Texas, male students (19.4 percent) were significantly more likely than female students (8.7 percent) to be overweight or obese. This significant gender difference was identified for white and Hispanic students as well as students in all grade subpopulations and age groups.
- Overall in Texas, African American (17.3 percent) and Hispanic students (17.6 percent) were significantly more likely than white students (10.9 percent) to be overweight or obese. White female students (5.3 percent) were significantly less likely than African American female students (15.1 percent) and Hispanic female students (10.8 percent) to be overweight or obese.



Other study of Texas youth overweight and obesity

Texas is the first state in the nation to examine the prevalence of obesity among school-age children at the state level using actual height and weight measurements of students and a standard protocol by trained and certified staff. The University of Texas Health Science Center–Houston School of Public Health began the study in 2001. Results from the first year of the study indicate that the prevalence of overweight (BMI > 95th percentile for age and gender) among children in Texas is far higher than the prevalence of overweight among children in the nation as a whole. (As noted above, according to the 2001 YRBSS, 10.5 percent of students nationwide are overweight.)¹⁵ See table 3.5 below for a summary of this study.¹⁶

Table 3.5 Prevalence of Overweight for Texas Schoolchildren by Grade, Gender, and Race/Ethnicity, 2001

| Race/Ethnicity | 4th Graders, % Overweight* | 8th Graders % Overweight* | 11th Graders % Overweight* |
|-------------------------|---------------------------------------|--------------------------------------|---------------------------------------|
| All | | | |
| Girls | 21.3 | 16.7 | 11.7 |
| Boys | 23.6 | 21.4 | 19.2 |
| White/Other† | | | |
| Girls | 13.7 | 15.3 | 5.5 |
| Boys | 17.7 | 15.0 | 12.7 |
| African American | | | |
| Girls | 30.8 | 23.1 | 17.2 |
| Boys | 21.6 | 13.8 | 19.0 |
| Hispanic | | | |
| Girls | 26.4 | 16.2 | 19.4 |
| Boys | 31.1 | 32.6 | 29.5 |

*Overweight means greater than or equal to the 95th percentile for BMI by age and gender as defined by CDC growth charts.

†Includes non-Hispanic whites, Asians, Pacific Islanders, Native Americans, and “others.”

Source: Pending publication. Surveillance project conducted by UT Health Science Center–Houston School of Public Health, supported by Texas Department of Health Innovation Grant funding, 2001.

Physical Activity

“Many Americans may be surprised at the extent and strength of the evidence linking physical activity to numerous health improvements,” the Surgeon General declared in that office’s first report on physical activity and health on the eve of the 1996 Summer Olympics in Atlanta.¹⁷ In fact, even moderate amounts of regular physical activity have been shown to produce significant health benefits. Regular physical activity decreases the risk of coronary heart disease — the nation’s leading cause of death — and overall mortality as people who are sedentary have twice the risk for heart disease of those who are active.¹⁸ Further, physical activity has been shown to help in the control of hypertension, diabetes, and weight, and in reducing osteoporosis, anxiety, and depression.¹⁹



In the 2000 Behavioral Risk Factor Survey, respondents were asked if they had participated in any physical activities during the past month (responses are summarized in Table 3.6).

- In 2000, Texas adults were slightly more likely to report no physical activity in the past month than the national median.
- Texas Hispanics performed particularly poorly on this indicator, both relative to other racial/ethnic groups within the state and compared to the national median, as nearly 4 out of 10 Texas Hispanics reported no physical activity.
- Women were more likely than men to report no physical activity during the past month, both in Texas and the nation.
- Texans ages 18–44 years were more likely to report no physical activity than the national median. Among those age 45 and over, differences between Texas and U.S. were not statistically significant.
- Throughout the 1990s the BRFSS asked respondents various questions regarding physical activity. CDC’s analysis of these different questions and responses over time has led researchers to conclude that trends in physical activity remained stable during the period 1990–98.²⁰

**Table 3.6 No Physical Activity in Past Month
by Race/Ethnicity, Gender, and Age, Texas and U.S., 2000**

| | Texas % With No Physical Activity | U.S. Median* % With No Physical Activity |
|-----------------------|--|---|
| Adult | 28.5 | 26.9 |
| Race/Ethnicity | | |
| White | 24.1 | 24.8 |
| African American | 27.7 | 33.2 |
| Hispanic | 38.1 | 32.0 |
| Gender | | |
| Male | 26.5 | 24.0 |
| Female | 30.5 | 28.6 |
| Age | | |
| 18–24 | 22.7 | 18.0 |
| 25–34 | 27.4 | 23.0 |
| 35–44 | 28.8 | 25.0 |
| 45–54 | 29.3 | 26.6 |
| 55–64 | 31.8 | 29.9 |
| 65 + | 31.7 | 34.6 |

*U.S. median based on observations from 50 states, Puerto Rico, and the District of Columbia.

Source: Texas Department of Health, Texas Behavioral Risk Factor Surveillance System, 2000.



*Youth physical activity*²¹

Based on data from the 2001 Youth Risk Behavior Survey, approximately 65 percent of high school students both nationally and in Texas take part in sufficient physical activity (defined as participating in vigorous activity for at least 20 minutes on three or more of the past seven days preceding the survey and participating in moderate physical activity for at least 30 minutes on five or more of the past seven days preceding the survey).

About 48 percent of Texas high school students were enrolled in a physical education (PE) class, compared to 52 percent of high school students nationally. However, an equal percentage of Texas and national high school students (about one in three) attended a PE class daily.

Alcohol Abuse

Alcohol abuse is an underlying factor in a wide range of health problems including cardiovascular disease; liver, oral and esophageal cancer; hepatitis; gastrointestinal disorders; cirrhosis of the liver; and mental illness. Alcohol use by pregnant women can result in low birth weight and children born with fetal alcohol syndrome. Alcohol impairs reflexes and judgment, leading to motor vehicle crashes, violent behavior, injuries, and unplanned pregnancies.²² Since alcohol is abused by more people than all other drugs combined, it causes many more problems, including higher morbidity and mortality, than other forms of drug abuse.²³ The estimated economic cost of alcohol abuse in the U.S. for 1998 is \$184.6 billion, a total that includes health care expenditures, lost productivity, motor vehicle crashes, crime, and other costs.²⁴

Table 3.7 details two categories of adult alcohol abuse monitored by the BRFSS: binge drinking (consuming five or more drinks on one or more occasions in the past month) and chronic drinking (consuming 60 or more drinks during the last month). The data suggest:

- Texans are more likely than residents of other states to abuse alcohol, as Texas rates for both binge and chronic drinking are higher than the national median.
 - ▼ The national median for binge drinking in 1999 was 14.9 percent of adult Americans.
 - ▼ The national median for chronic drinking in 1999 was 3.6 percent of adult Americans.
- African Americans in Texas are less likely than members of other racial/ethnic groups to report binge or chronic drinking.
- Males are much more likely than females in Texas to abuse alcohol.
- In Texas, binge and chronic drinking are most prevalent among young adults, and rates of alcohol misuse decline significantly as persons age.



**Table 3.7 Binge and Chronic Drinking
by Race/Ethnicity, Gender, and Age, Texas 2000**

| | Binge Drinking | Chronic Drinking |
|-----------------------|-----------------------|-------------------------|
| Adult Texans | 18.2 | 4.8 |
| U.S. Median (1999)* | 14.9 | 3.6 |
| Race/Ethnicity | | |
| White | 18.0 | 5.2 |
| African American | 12.0 | 3.0 |
| Hispanic | 21.0 | 4.3 |
| Gender | | |
| Male | 28.5 | 8.1 |
| Female | 8.5 | 1.7 |
| Age | | |
| 18–34 | 29.4 | 7.0 |
| 35–49 | 18.3 | 4.1 |
| 50–64 | 10.4 | 4.4 |
| 65 + | 3.4 | 2.0 |

*U.S. median based on observations from 50 states, Puerto Rico, and the District of Columbia.
Source: Texas Behavioral Risk Factor Surveillance System, 2000.

Youth and alcohol²⁵

- In 2001, nearly half (48.6 percent) of Texas high school students had had at least one drink of alcohol on one or more of the past 30 days (“current alcohol use”).
 - ▼ Nationally, 47.1 percent of students reported at least one drink of alcohol on one or more of the past 30 days.
- Overall, Texas Hispanic (53.3 percent) and white (48.8 percent) students were more likely than African American students (36.4 percent) to report current alcohol use. This significant racial/ethnic difference was identified for female and male students alike.
- Texas male students in grade 11 (54.7 percent) were significantly more likely than female students in grade 11 (45.1 percent) to report current alcohol use.

Illicit Drug Use

The use of illicit drugs is associated with child and spousal abuse; sexually transmitted diseases, including HIV infection; teen pregnancy; school failure; motor vehicle crashes; escalation of health care costs; low worker productivity; and homelessness. Illicit drug use also can disrupt family, work, and personal life.²⁶

There is considerable evidence that illicit drug use is associated with emotional or psychological distress, particularly with depression and anxiety. The National Comorbidity Study found that the rate of illicit drug



and alcohol abuse among members of the general population who had a mental disorder was twice as high as the rate among those with no mental disorder. Thus psychiatric illness may be a risk factor for illicit drug use or may develop as a result of chronic use.²⁷

Adult illicit drug use

From July 2000 to March 2001, the Texas Commission on Alcohol and Drug Abuse (TCADA) conducted a statewide household survey of alcohol and drug use among Texas adults (results are reported in Table 3.8). TCADA conducted similar surveys in 1988, 1993, and 1996.²⁸

- In 2000, about 1 out of every 10 Texas adults reported use of any illicit drug in the past year. This represents the highest level of drug use among Texas adults since the survey began in 1988.
- ▼ Based on data from a comparable national data source, rates of substance use among adults are similar for Texas and the nation. In 2000, about 10 percent of U.S. adults reported past-year use of illicit drugs.²⁹
- The 2000 survey did not show wide deviations in illicit drug use among racial/ethnic groups. However, males were much more likely than females to report illicit-drug use (12 percent versus 7 percent).
- Use of illicit drugs is highest among young adults and drops sharply with increasing age. In 2000, 28 percent of the 18–24 age group reported illicit drug use in the past year; 12 percent of the 25–34 age group, and 4 percent of the 35-and-older age group.

Table 3.8 Prevalence of Past-Year Substance Use Among Texas Adults by Demographic Group, 2000

| Substance | % | | | | | | % Per Age Group | | |
|---------------------|-------------------|-------------|---------------|--------------|-------------------|-----------------|------------------------|--------------|------------|
| | All Adults | Male | Female | White | Afr. Amer. | Hispanic | 18–24 | 25–34 | 35+ |
| Tobacco | 29.0 | 33.0 | 25.1 | 30.1 | 23.0 | 28.6 | 45.9 | 32.4 | 23.4 |
| Alcohol | 65.7 | 72.8 | 59.2 | 68.4 | 57.4 | 62.6 | 76.0 | 76.6 | 58.9 |
| Heavy Alcohol | 5.7 | 9.7 | 1.9 | 5.7 | 4.5 | 6.2 | 12.1 | 7.4 | 3.4 |
| Marijuana | 7.0 | 9.3 | 5.0 | 6.9 | 8.6 | 6.8 | 22.1 | 8.9 | 2.6 |
| Inhalants | 0.4 | 0.6 | 0.1 | 0.4 | 0.2 | 0.4 | 1.3 | 0.4 | 0.1 |
| Cocaine | 1.9 | 2.8 | 1.1 | 1.8 | 0.8 | 3.0 | 5.3 | 2.8 | 0.7 |
| Crack | 0.4 | 0.7 | 0.2 | 0.3 | 0.9 | 0.4 | 1.0 | 0.5 | 0.2 |
| Cocaine or Crack | 2.0 | 3.0 | 1.1 | 1.8 | 1.3 | 3.1 | 5.5 | 2.9 | 0.9 |
| Uppers | 1.9 | 2.1 | 1.8 | 2.4 | 1.0 | 1.2 | 6.1 | 2.9 | 0.5 |
| Downers | 1.8 | 2.4 | 1.4 | 2.2 | 1.0 | 1.3 | 6.6 | 2.6 | 0.4 |
| Heroin | 0.1 | 0.2 | 0.1 | 0.1 | 0.0 | 0.2 | 0.5 | 0.0 | 0.1 |
| Other Opiates | 1.6 | 2.1 | 1.1 | 1.8 | 1.6 | 1.1 | 6.4 | 1.6 | 0.3 |
| Psychedelics | 1.8 | 2.8 | 0.9 | 1.9 | 0.9 | 2.2 | 8.0 | 1.7 | 0.4 |
| Any Illicit Drug(s) | 9.4 | 11.9 | 7.0 | 9.3 | 10.6 | 9.1 | 28.1 | 12.3 | 3.6 |

Source: Texas Commission on Alcohol and Drug Abuse, 2000 Survey of Substance Use Among Adults.



Youth illicit drug use³⁰

According to the Youth Risk Behavior Survey, rates of lifetime use of seven major categories of drugs are similar for Texas and U.S. high school students with the exception of cocaine, which is more likely to be used by Texas students (Table 3.9). In both Texas and the U.S., about 40 percent of high school students report lifetime use of marijuana.

Table 3.9 Prevalence of Lifetime Illicit Drug Use Among High School Students, Texas vs. U.S., 2001

| Drug | Texas | U.S. |
|-----------------|-------|------|
| Marijuana | 41% | 42% |
| Cocaine | 13% | 9% |
| Inhalant | 14% | 15% |
| Heroin | 3% | 3% |
| Methamphetamine | 8% | 10% |
| Steroid | 6% | 5% |
| Injecting Drugs | 2% | 2% |

Source: Texas Department of Health, Bureau of Chronic Disease and Tobacco Prevention.

Preventive Health Services

Access to preventive health services has a positive influence on personal health and is usually cost-effective in comparison with the treatment of disease.³¹ For many conditions, health screens are available to detect diseases in their early stages, when treatment is most likely to succeed. Regular screening can detect cancers of the breast, cervix, colon, and rectum. Screening and appropriate follow-up for high blood pressure and high cholesterol can lead to interventions to prevent or delay the onset of cardiovascular disease and other health problems.³² Some health problems can be prevented altogether through easily administered and widely available medical technologies. Immunizations, for example, have saved countless lives and extraordinary amounts of money in treatment costs.

Table 3.10 details the levels at which Texas adults make use of selected screens and preventive services. All services included in this analysis have been demonstrated to save lives and money.

Cholesterol screening

High cholesterol is one of the major modifiable risk factors for cardiovascular disease, especially coronary heart disease (CHD). High blood cholesterol may account for as much as 30 percent of CHD in the United States.³³ A simple blood test can identify those at risk, and, once identified, interventions ranging from dietary changes to prescription medications are available to control cholesterol levels. But despite the benefits, 31 percent of surveyed Texas adults, including 45 percent of Hispanics, report that they have not received a blood-cholesterol check within the past five years.



**Table 3.10 Lack of Selected Preventive Health Services
by Race/Ethnicity, Gender, and Age, Texas**

| | No Cholesterol Check Within 5 Years, 1999 | No Blood Pressure Check Within 2 Years, 1999 | No Mammogram & Clinical Breast Exam (Females, Age 40+), 2000 | No Pneumonia Shot (Age 65+), 1999 |
|------------------------------|--|---|---|--|
| Adult Texans | 30.8 | 8.7 | 23.0 | 44.1 |
| U.S. Median | 30.9 | 5.4 | 18.0 | 45.1 |
| Race/Ethnicity | | | | |
| White | 23.6 | 5.1 | 10.9 | 39.5 |
| African American | 30.0 | 6.1 | 30.4 | 70.5* |
| Hispanic | 44.5 | 9.1 | 34.6 | 70.1* |
| Gender | | | | |
| Male | 34.5 | 13.1 | — | 45.4 |
| Female | 27.3 | 4.5 | 23.0 | 43.3 |
| Age | | | | |
| Cholesterol & Blood Pressure | | | | |
| 18–34 | 49.7 | 11.1 | | |
| 35–49 | 30.3 | 10.2 | | |
| 50–64 | 14.8 | 6.7 | | |
| 65 + | 9.5 | 2.8 | | |
| Mammogram | | | | |
| 40–49 | | | 26.5 | |
| 50–64 | | | 17.3 | |
| 65 + | | | 25.2 | |
| Pneumonia Shot | | | | |
| 65–74 | | | | 49.0 |
| 75 + | | | | 36.7 |

*Unreliable due to small sample size — however, the combined results for the *African American* and *Hispanic* categories are statistically different than results for the *white* grouping.

Source: Texas Department of Health, Texas Behavioral Risk Factor Survey, 1999 and 2000.

Hypertension screening

Hypertension, or high blood pressure, strains the heart and arteries and is a risk factor for heart attacks, strokes, kidney failure, eye damage, and atherosclerosis. Because hypertension has no clear symptoms, regular blood-pressure screenings are important to detect this problem before any health complications occur. Treatments for hypertension, including medication, behavior modification, or a combination of both, can usually prevent or delay serious health problems.³⁴ Even so, Texans are less likely than other Americans to have received a blood-pressure check within the past two years.



Mammography

Mammography is the best available method for detecting breast cancer in its earliest, most treatable stage. Timely mammography screening among women older than age 40 could prevent 15–30 percent of all deaths from breast cancer.³⁵ However, nearly a quarter of the state’s women ages 40 and older report that they have never received a mammogram and clinical breast exam. African American and Hispanic women are three times as likely as white women never to have received this potentially life-saving health screen.

Pneumococcal Vaccination for Texans Ages 65 and Older

In 2000, over 3,600 Texans died of pneumonia. Approximately 90 percent of the deceased were older than 65 and nearly two-thirds were aged 80 or older.³⁶ Pneumococcal vaccination, available at no cost through Medicare Part B, could have prevented many of these deaths. Although pneumococcal immunization rates among Texas senior citizens improved by 50 percent between 1994 and 1999, over 44 percent of Texans age 65 and over, including a disproportionately high number of minorities, still report that they have not received this important vaccination.

Sexual Behavior

The risky health behaviors discussed thus far in this chapter make a major contribution to chronic disease morbidity and mortality. Sexual behavior may put people at risk for infectious diseases such as HIV and other sexually transmitted diseases (see also Chapter 5).

Texas data: sexual behavior

In 1999, Texas included a special module on sexual behavior in the core Behavioral Risk Factor Surveillance System questionnaire for adults ages 18 to 49. Analysis of that data reveal the following:

- Eleven percent of respondents reported having sex with more than one partner in the past year.
- Eighty percent of sexually active respondents reported that none of their partners in the past year were new contacts, while 12 percent had only one new partner, and 7 percent had two or more new partners. The youngest age group (18–24) had the highest percentage of respondents with one or more new partners at 39 percent, compared to 20 percent of those aged 25–34 and 12 percent of those ages 35–49.
- Respondents were also asked if any of several specific HIV risks applied to them. The list of risks included use of intravenous drugs in the past year, engaging in anal sex without a condom in the past year, and testing positive for HIV. Overall, only 6 percent of those taking part in the survey admitted to any of the listed risk activities, although 13 percent of African Americans reported involvement in an HIV risk behavior.

*National data: sexual behavior*³⁷

The United States has not fielded a large nationwide survey dealing with sexual behaviors and their causes in more than six years. In 2001, several researchers examined the data from three prominent national surveys conducted in 1990, 1992, and 1996. The study looked at HIV/STD risk behavior and condom use for at-risk heterosexuals between ages 18 and 49. In all three surveys, a person was defined as being “at risk”



if the person had more than two sexual partners in the past year or had a sexual partner who either was having sex with others or had been an intravenous drug user for 5 years. A few statistics from the 2001 article are informative. Note that “poor condom use” refers to using condoms less than 50 percent of the time during vaginal or anal intercourse:

- The proportion of the at-risk, heterosexual population engaging in high-risk sexual behaviors was stable across the interval 1990 (15 percent) to 1992 (14 percent) and then increased approximately 3 percent by 1996.
- Condom use increased from 1990 to 1992 and remained stable between 1992 and 1996. In 1990, 81 percent of at-risk heterosexuals reported poor condom use. In 1992, 58 percent reported poor condom use, and in 1996, 61 percent reported poor condom use.
- At-risk, heterosexual African Americans had a 42 percent decline in poor condom use from 1990 to 1992. Hispanics had a 30 percent decline in poor condom use, and whites had a 13 percent decline.
- Among at-risk heterosexual women, poor condom use declined from 82 percent in 1990 to 67 percent in 1996.
- Among at-risk heterosexual men, poor condom use declined between 1990 and 1992 (80 percent to 50 percent) but then rose in 1996 (to 56 percent).
- Among at-risk heterosexual young adults ages 18–30, poor condom use declined from 1990 to 1992 (76 to 53 percent) then remained stable from 1992 to 1996 (1996: 52 percent).
- Among at-risk heterosexual adults ages 31–49, poor condom use declined between 1990 and 1992 (87 to 65 percent) and then rose between 1992 and 1996 (65 to 74 percent).

*Youth sexual behavior*³⁸

Sexual intercourse

- According to the 2001 Youth Risk Behavior Survey, 50.4 percent of Texas high school students have had sexual intercourse during their lifetime. A greater proportion of male students (52.9 percent) have had sexual intercourse than female students (47.7 percent), although the difference is not statistically significant. African American students (68.9 percent) were significantly more likely than Hispanic (52.7 percent) and white (43.7 percent) students to have had sexual intercourse.
- Nationally, 45.6 percent of high school students reported sexual intercourse during their lifetime.



Multiple sexual partners

- About 16.4 percent of Texas high school students have had sexual intercourse with four or more people during their lifetime. Overall, African American students (31.5 percent) were significantly more likely than Hispanic (15.9 percent) and white (12.7 percent) students to report this behavior.
 - ▼ Nationally, 14.2 percent of high school students reported sexual intercourse with four or more sex partners during their lifetime.

Currently sexually active

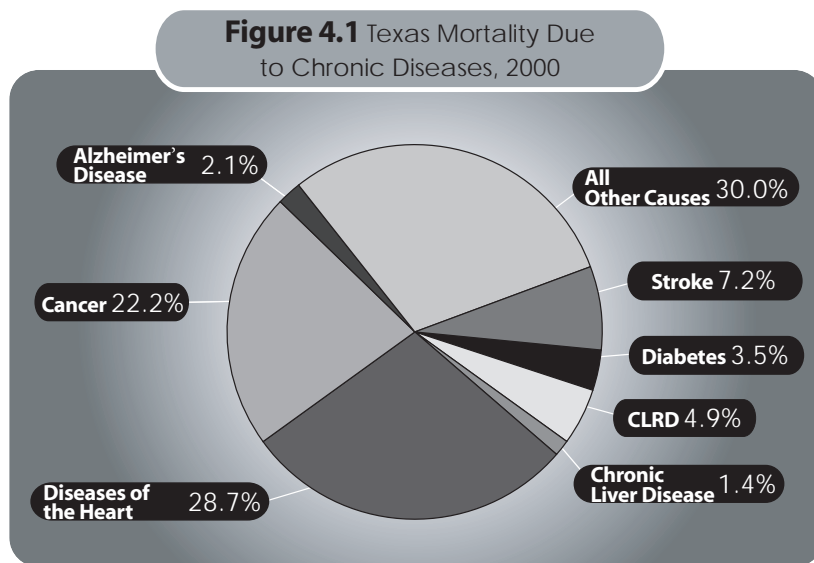
- About 36.2 percent of Texas high school students had sexual intercourse during the three months preceding the survey (currently sexually active).
 - ▼ Nationally, 33.4 percent of high school students had sexual intercourse during the three months preceding the survey.
- Overall, African American students (48.8 percent) were significantly more likely than Hispanic (37.9 percent) and white (31.6 percent) students to be currently sexually active.



Chronic conditions are the major cause of illness, disability, and death in Texas as well as in the United States.¹ Chronic diseases are generally characterized by multiple risk factors, a long latency period, a prolonged course of illness, non-contagious origin, functional impairment or disability, and low curability.²

Every year, chronic diseases claim the lives of more than 101,000 Texans. These diseases are responsible for seven of every 10 deaths in the state of Texas. In 2000, four of the five leading causes of death in Texas were chronic diseases, including diseases of the heart, cancer, stroke, and chronic lower respiratory diseases. Other chronic diseases among the top ten leading causes of death in Texas include diabetes, Alzheimer's disease, and chronic liver disease and cirrhosis.³

Figure 4.1 shows that chronic diseases caused nearly 70 percent of deaths in Texas in 2000.



Source: Texas Department of Health, Bureau of Vital Statistics.

Most of these chronic disease conditions are preventable.⁴ Modifiable risk factors that are associated with many of these chronic disease conditions have been identified. Three risk behaviors — tobacco use, physical inactivity, and poor nutrition — are the major contributors to cardiovascular disease and cancer, the nation's leading causes of death.⁵ These behaviors also worsen the life-threatening complications of diabetes.⁶

Effective prevention measures exist today that aim to reduce the incidence of the illnesses, disabilities, and unnecessary or early deaths caused by these disease conditions.

Moreover, medical procedures are available to detect certain chronic diseases in their early stages, when treatment is most effective.⁷ Regular screening can detect cancers of the breast, cervix, colon, and rectum and is also critical in preventing the debilitating complications of diabetes.

In this chapter, the following selected chronic diseases will be discussed: coronary heart disease, stroke, cancer, asthma, and diabetes. The chapter will also address osteoporosis, arthritis, and Alzheimer's disease, which are especially common in the growing geriatric population of Texas.

Coronary Heart Disease

Coronary heart disease (CHD), also called ischemic heart disease or coronary artery disease, results from a reduced blood supply to the heart. Modifiable risk factors for CHD include hypertension, tobacco use, high cholesterol levels, physical inactivity, poor nutrition, and second hand tobacco smoke.⁸ Modest changes by individuals in one or more of these risk factors can have an aggregated large public health impact.

General Data

- CHD is the single largest killer of Texans (31,782 deaths in 2000).⁹
 - ▼ CHD caused 529,659 deaths in the United States in 1999 — about 1 of every 5 deaths — making it the single largest killer in the U.S.¹⁰
- In Texas, ten-year mortality trend data show that age-adjusted rates for CHD have decreased significantly from a total of 192.2 per 100,000 in 1989 to 176.0 per 100,000 in 1998.¹¹

Race/Ethnicity Data

- In Texas, five-year average age-adjusted mortality data show that, among the racial/ethnic groups, African Americans have the highest CHD mortality rates compared to whites and Hispanics (218.4 per 100,000 for African Americans, 189.1 per 100,000 for whites, and 147.1 per 100,000 for Hispanics, using 2000 standard population).¹²

Gender Data

- Five-year average age-adjusted mortality data show that Texas males have approximately twice the risk of dying from CHD compared with females (233.3 per 100,000 for males versus 147.0 per 100,000 for females, using 2000 standard population).¹³

Fiscal Data

- The estimated direct and indirect costs of CHD in the U.S. in 2002 will be \$111.8 billion. This figure includes health expenditures (direct costs which include the costs of physicians and other professionals, hospital and nursing-home services, medications, and home health care and medical durables) and lost productivity resulting from morbidity and mortality (indirect costs).¹⁴

Cancer

Cancer is a diverse group of diseases characterized by the uncontrolled growth and spread of abnormal cells anywhere in the body. Despite the recently reported decline in cancer mortality both in Texas and in the nation, cancer remains a serious health problem. The American Cancer Society (ACS) estimates that approximately one in two men and one in three women alive today will develop some



type of cancer in their lifetimes.¹⁵ As previously mentioned, in Texas and the U.S., cancer is the second leading cause of death, exceeded only by heart disease.

Because there are so many diverse types of cancer, there are also a variety of risk factors associated with each. Cancer is seldom caused by only one factor — almost always by a combination of factors, including lifestyle, heredity, and environment.¹⁶

According to ACS about one-third of the more than 555,000 cancer deaths expected in 2002 are also preventable because they will be related to tobacco use, poor nutrition, physical inactivity, obesity, and other lifestyle factors. ACS estimates that in 2002 approximately 170,000 (30 percent) of all cancer deaths are expected to be caused by tobacco use in the U.S., 154,900 (91 percent) of these from lung cancer.¹⁷ Lung cancer remains the leading cause of cancer death in the U.S. and Texas for both men and women.¹⁸ Tobacco use also causes increased risk for cancers of the mouth, pharynx, esophagus, pancreas, kidney, bladder, and uterine cervix.¹⁹

Also according to ACS, certain cancers related to viral infections — e.g., hepatitis B virus (HBV), human papillomavirus (HPV), HIV, and others — could be prevented through behavioral changes or vaccines. In addition, many of the more than one million skin cancers diagnosed each year could be prevented by protection from the sun's rays. Appropriate use of screening for certain cancers such as breast, colon and rectum, cervix, prostate, and skin could also significantly increase survival rates, largely due to earlier detection.²⁰

*Cancer Incidence (1998)*²¹

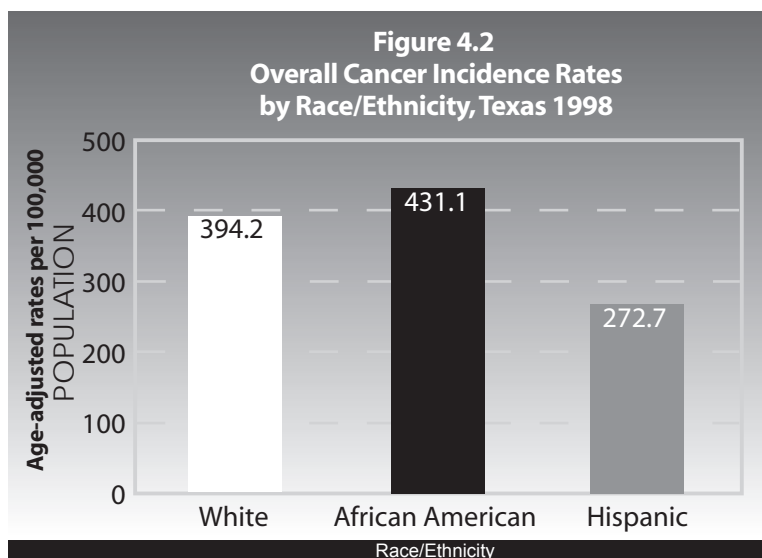
General incidence data

- A total of 73,299 newly diagnosed cancer cases were reported among Texas residents in 1998.
- Cancers of the prostate, breast, lung and bronchus, and colon and rectum accounted for almost 50 percent of all cancers reported among Texas residents in 1998.
 - ▼ Lung, prostate, breast, and colorectal cancers accounted for about 56 percent of all new cancer cases in the U.S.²²

Race/ethnicity incidence data

- The overall cancer experience of Texans differed substantially by race/ethnicity (see Figure 4.2). African Americans had the highest rate, followed by whites, then Hispanics.





Source: Texas Department of Health, Texas Cancer Registry.

*Rates are age-adjusted to the 1970 U.S. Standard Million Population

- Age-adjusted cancer rates for most cancer sites tended to be lower in Hispanics in Texas with a few important exceptions:
 - ▼ Hispanic women had the highest rate of cervical cancer (13.2/100,000), almost twice as high as white women (8.2/100,000).
 - ▼ Rates of stomach, liver, and gallbladder cancers were also higher in Hispanic males and females compared with white males and females (see Table 4.1).

Table 4.1 Incidence Rates for Stomach, Liver, and Gall Bladder Cancer
Hispanic and Whites, by Gender, Texas, 1998

| | Hispanic | White |
|---------------|----------|-------|
| Male | | |
| Stomach | 14.0 | 6.7 |
| Liver | 13.1 | 5.2 |
| Gall bladder | 1.1 | 0.3 |
| Female | | |
| Stomach | 7.7 | 3.1 |
| Liver | 4.9 | 1.8 |
| Gall bladder | 3.0 | 0.8 |

Source: Texas Department of Health, Texas Cancer Registry.

*Rates per 100,000 and age-adjusted to the 1970 U.S. Standard Million Population



Gender incidence data

- Prostate cancer was the leading new cancer in Texas men, with 10,483 cases reported (27.5 percent of the total).
- Among Texas women, breast cancer accounted for almost one-third of all new cancers reported, with 11,000 cases per year.
- Lung and bronchus cancers were the second, and colon and rectum cancers the third, most commonly diagnosed cancers in Texas men and women.

Age incidence data

- The pattern of leading cancer types differed in younger compared with older Texans. Testicular cancer was the leading type in men 15–34 years of age, while colon and rectum cancer was the leading type in men 35–44 years. Prostate cancer was the leading cancer type in men aged 45 and older.
- For women in Texas, breast cancer was the leading cancer type in all age groups, except in the oldest age group aged 85 and older, where colon and rectum cancer was the leading type. Cancer of the cervix was more common in younger women in Texas — the second leading cancer in women age 15–44.

Cancer mortality data (2000)

General mortality data

- Since 1935, cancer has claimed an increasing percentage of deaths in Texas relative to other causes of death.²³ Cancer accounted for 22.2 percent of the deaths in Texas in 2000, making it the state's second leading cause of death (death rate of 163.7 per 100,000 population).²⁴
- Lung cancer remains the leading cause of cancer death in Texas and the U.S. for both men and women.²⁵
- Ten-year mortality trend data for Texas shows that age-adjusted rates for cancer have decreased from a total of 206.6 per 100,000 in 1989 to 200.6 per 100,000 in 1998. The declining trend, however, is not statistically significant.²⁶
 - ▼ In the U.S. in 1999, 549,838 people died of cancer.²⁷ Overall U.S. cancer mortality declined 1.1 percent yearly for the period from 1992 to 1998. The largest decrease of 2.5 percent per year occurred in African American men, who bear the heaviest cancer burden.²⁸ (Note: In Texas, there has not been such a sizable decrease in African American male mortality. The largest mortality decrease occurred in white men).



Race/ethnicity mortality data

- In Texas in 2000, cancer was the second leading cause of death for whites (22.8 percent of white deaths), African Americans (22.3 percent of deaths), and Hispanics (19.5 percent of deaths).²⁹
- In Texas, five-year age-adjusted mortality data show that African Americans have higher cancer mortality rates than whites and Hispanics (287.5 per 100,000 for African Americans, 210.0 per 100,000 for whites, and 154.6 per 100,000 for Hispanics, using the 2000 standard population).³⁰ In particular, African American men in Texas have much higher age-adjusted mortality rates for prostate cancer than whites or Hispanics (see Table 4.2).

| Table 4.2 Prostate Cancer Mortality Rates* By Race/Ethnicity, Texas, 2000 | |
|---|------------------------|
| | Mortality Rates |
| White | 28.1 |
| African American | 60.3 |
| Hispanic | 21.2 |
| Other | 8.1 |

Source: Texas Department of Health, Texas Cancer Registry.

*Rates are per 100,000 and age-adjusted to the 2000 U.S. Standard Million Population.

- While the age-adjusted incidence of breast cancer in Texas is significantly lower in African American females (93.8/100,000) compared to white females (112.6/100,000), breast cancer age-adjusted mortality is significantly higher in African American females (36.5/100,000) than in white females (25.4/100,000).³¹

Gender mortality data

- In Texas, five-year age-adjusted mortality data show that males have higher mortality risk due to cancer than females (264.1 per 100,000 for males and 167.8 per 100,000 for females, using the 2000 standard population).³²
- Cancers of the lung and bronchus were the leading cause of cancer deaths in Texas men and women with 5,729 and 3,768 deaths reported, respectively.³³
- Among women in Texas, breast cancer was the second leading cause of cancer deaths, with 2,469 deaths reported. Among men, prostate cancer was the second leading cause of cancer deaths, with 1,717 deaths reported.³⁴
- The third leading cause of cancer deaths was colon and rectum cancers among both Texas men and women with 1,616 and 1,606 deaths reported, respectively.³⁵



Age mortality data

- Among all Texas age groups in 2000, cancer was one of the five leading causes of death except for males aged 25–34. In the age groups 55–64 and 65–74, cancer was the number one killer of both men and women.³⁶
- ▼ In the U.S., in all age groups, cancer was one of the top four leading causes of death.³⁷

Fiscal notes

- The total cost of cancer in Texas in 1998 was estimated to be about \$13.9 billion, which includes direct costs of \$4.8 billion and indirect costs of \$9.1 billion.³⁸
- The National Institutes of Health estimate overall U.S. costs for cancer in the year 2000 at \$180.2 billion: \$60 billion for direct medical costs (total of all health expenditures); \$15 billion for indirect morbidity costs (cost of lost productivity due to premature illness); and \$105.2 billion for indirect morbidity costs (cost of lost productivity due to premature death).³⁹

Stroke

Stroke, or cerebrovascular disease, is a major cause of death and disability in Texas and the U.S. Stroke is a sudden loss of brain function caused by a blockage or rupture of a blood vessel to the brain, characterized by loss of muscular control, diminution or loss of sensation or consciousness, dizziness, slurred speech, or other symptoms that vary with the extent and severity of the damage to the brain. The major risk factors for stroke are tobacco use and uncontrolled hypertension.⁴⁰

Stroke Deaths

General data

- In Texas, stroke was the third leading cause of death in 2000, accounting for 10,721 deaths, or 7.2 percent of all deaths. It has been the third leading cause of death in Texas since 1960.⁴¹
- ▼ Across the U.S., stroke killed 167,366 people in 1999.⁴² From 1989 through 1999, the national stroke death rate fell 13.0 percent, but the actual number of stroke deaths rose about 9 percent.⁴³

Race/ethnicity data

- In Texas in 2000, stroke was the third leading cause of death for whites (7.4 percent of white deaths) and African Americans (7.3 percent of African American deaths). For Hispanics, stroke was the fifth leading cause of death in 2000 (6.2 percent of Hispanic deaths).⁴⁴
- ▼ Nationwide, stroke was the third leading cause of death for both whites and African Americans in 1999. Stroke was responsible for 7.1 percent of white deaths and 6.6 percent of African American deaths. In 1999, stroke was the fourth leading cause of Hispanic deaths, accounting for 5.7 percent of Hispanic deaths.⁴⁵



- In Texas, five-year average age-adjusted mortality data show that, among the race groups, African Americans have the highest mortality rates for stroke compared to whites and Hispanics (96.7 per 100,000 for African Americans, 65.3 per 100,000 for whites, and 53.4 per 100,000 for Hispanics, using the 2000 standard population).⁴⁶

Gender data

- Five-year average age-adjusted mortality data shows that the mortality rates for stroke were higher for Texas females than for males; however, the risk of dying due to stroke does not differ significantly between males and females (67.1 per 100,000 for females and 64.5 per 100,000 for males, using the 2000 standard population).⁴⁷

Age data

- In the U.S. in 2000, stroke was one of the top ten leading causes of death for all age groups.⁴⁸

Notes

- Because of the neurological damage that stroke causes, stroke survivors often experience significant disability. Survivors may experience complete disability, depression, inability to communicate, and limits on both occupational and recreational activity.⁴⁹
- Up to one-third of stroke survivors need help caring for themselves, 20 percent need help walking, and 70 percent are not able to perform the same job tasks they did before the stroke.⁵⁰

Asthma

Asthma is a chronic, often progressive disease in which the airways become temporarily blocked or inflamed, causing difficulty in breathing. Asthma is a subset of chronic lower respiratory diseases. Factors that can exacerbate asthma fall into four categories. Upper respiratory viral illness, such as influenza or a cold, can exacerbate asthma symptoms. Indoor air pollution can contribute to attacks. The triggers most commonly found in the home, schools, or workplaces are allergens (e.g., cockroaches, dander, and dust mites), smoke, and odors (e.g., perfumes, cleaning agents). Outdoor air pollutants such as vehicular or industrial emissions can aggravate chronic asthma and limit activities.

Asthma currently cannot be cured, only controlled. A continuous, multifaceted approach is required to prevent and manage asthma. This includes educating, treating, and providing continual medical care and monitoring for people who have asthma; changing behaviors that lead to asthma or worsening of asthma; and eliminating or avoiding asthma triggers.⁵¹

On the Texas and national Behavioral Risk Factor Surveillance Survey in 2000, respondents were asked if a doctor had ever told them they had asthma. Table 4.3 shows asthma prevalence by race/ethnicity, gender, and age for the Texas adult population and compares these results to national data.

- Approximately one in ten adult Texans and adults in the U.S. had been told they had asthma.
- In Texas and the U.S., Hispanics report asthma less often than whites and African Americans.



- Women report asthma more often than men in both Texas and the U.S.
- The 18–24 age group, both in Texas and the U.S., has the highest reported prevalence of asthma.

**Table 4.3 Asthma Prevalence in Adults
by Race/Ethnicity, Gender, and Age**

Texas and U.S., 2000

| | Texas, % diagnosed with asthma | U.S. Median* % diagnosed with asthma |
|-----------------------|---------------------------------------|---|
| All | 10.6 | 10.5 |
| Race/Ethnicity | | |
| White | 12.8 | 10.4 |
| African American | 11.2 | 12.1 |
| Hispanic | 6.0 | 9.8 |
| Gender | | |
| Males | 9.0 | 8.8 |
| Females | 12.0 | 12.2 |
| Age | | |
| 18–24 | 15.7 | 15.0 |
| 25–34 | 9.8 | 10.6 |
| 35–44 | 9.4 | 9.6 |
| 45–54 | 9.2 | 10.2 |
| 55–64 | 10.9 | 9.8 |
| 65+ | 9.2 | 8.7 |

Source: Texas Department of Health, Texas Behavioral Risk Factor Surveillance System, 2000.

*U.S. median based on observations from 50 states, Puerto Rico, and the District of Columbia.

Asthma and children

- Asthma is the most prevalent chronic disease among children.⁵²
- Childhood asthma in the U.S. has dramatically increased in the last 15 years: one in 13 children suffers from asthma. The most rapid increase in asthma has occurred in children under the age of five — an increase of 160 percent.⁵³
- Asthma affects more children than any other chronic disease. Among children under 16 years of age, asthma is the leading cause of school absenteeism with more than 10 million missed days per year. Each year children with asthma miss twice as many school days as children without asthma.⁵⁴



Fiscal notes

- The cost of asthma in the U.S. in 2000 was estimated to be \$12.7 billion, with direct costs amounting to \$8.1 billion and lost earnings due to illness and death totaling \$4.6 billion.⁵⁵
- Based on national studies, the Allergy and Asthma Foundation of America estimates the total medical expenditures in Texas for asthma to be \$763 million per year (\$435 million direct, \$328 million indirect).⁵⁶

Diabetes

Diabetes is a serious, costly, and increasingly common chronic disease that can cause devastating complications — including heart disease, kidney failure, leg and foot amputations, and blindness — that often result in disability and death. Early detection, improved delivery of care, and better self-management are key strategies for preventing much of the burden of diabetes.⁵⁷ Type 2 diabetes, formerly considered “adult onset” diabetes, is now being diagnosed more frequently among children and adolescents. Type 2 diabetes is linked to two modifiable risk factors: obesity and physical inactivity.⁵⁸

Diabetes Mortality Data

General mortality data

- Diabetes was the sixth leading cause of death in Texas in 2000, causing 5,195 deaths (3.5 percent of deaths). The death rate from diabetes in Texas was 25.5 per 100,000 population in 2000.⁵⁹
 - ▼ In the U.S. in 1999, 68,399 people died of diabetes. Diabetes was the sixth leading cause of death in 1999.⁶⁰ Across the nation, mortality rates for diabetes increased from 20.7 per 100,000 in 1990 to 24.2 per 100,000 in 1998.⁶¹
- In Texas, ten-year mortality trend data show that age-adjusted rates for diabetes have increased from 22.2 per 100,000 in 1989 to 30.8 per 100,000 in 1998. The increasing trend is statistically significant.⁶²

Race/ethnicity mortality data

- In Texas, five-year average age-adjusted mortality data show that mortality rates for African Americans and Hispanics were two to three times higher than for whites (56.1 per 100,000 for African Americans, 53.3 per 100,000 for Hispanics, and 22.4 per 100,000 for whites, using the 2000 standard population).⁶³

Gender mortality data

- In Texas, five-year average age-adjusted mortality data show that the mortality rates for diabetes were higher for Texas males than for females; however, the risk of dying due to diabetes does not differ significantly between males and females (31.9 per 100,000 for males and 29.2 per 100,000 for females, using the 2000 standard population).⁶⁴



Diabetes Morbidity Data

On the Texas and national Behavioral Risk Factor Surveillance Survey in 2000, respondents were asked if a doctor had ever told them they had diabetes. Table 4.4 shows diabetes prevalence by race or ethnicity, gender, and age for the Texas adult population and compares these results to the median national performance of 50 states, Puerto Rico, and the District of Columbia.

- Approximately 6 percent of the adults in the U.S. and Texas have been diagnosed with diabetes.
- In both Texas and the U.S., African Americans report being diagnosed with diabetes more often than whites and Hispanics.
- In both Texas and the U.S., diabetes diagnosis is more common in people ages 50 and older than in those younger than 50.

Table 4.4 Diabetes Prevalence by Race/Ethnicity, Gender, and Age

Texas and U.S., 2000

| | Texas, % diagnosed with diabetes | U.S. Median* % diagnosed with diabetes |
|-----------------------|---|---|
| All | 6.2 | 6.2 |
| Race/Ethnicity | | |
| White | 5.7 | 5.7 |
| African American | 9.0 | 9.7 |
| Hispanic | 6.4 | 4.8 |
| Gender | | |
| Males | 6.3 | 6.1 |
| Females | 6.1 | 5.9 |
| Age | | |
| 18-34 | 1.3 | 1.0 |
| 35-49 | 4.2 | 3.7 |
| 50-64 | 13.7 | 10.7 |
| 65+ | 11.9 | 14.0 |

Source: Texas Behavioral Risk Factor Surveillance System, 2000.

*U.S. median based on observations from 50 states, Puerto Rico, and the District of Columbia.

Notes on children and Type 2 diabetes

As children continue to become more overweight and participate in less than optimal physical activity, the prevalence of Type 2 diabetes in children may increase. Texas does not have current data on the prevalence of Type 2 diabetes in children because this is such a new phenomenon. If an increasing number of children do develop Type 2 diabetes, the complications related to diabetes, such as cardiovascular disease, blindness, and amputations that are typically seen in the elderly population, could be seen in younger adults.⁶⁵



In a recent Connecticut study, obese children and adolescents were found to have a high prevalence of impaired glucose tolerance, an intermediate stage in the history of Type 2 diabetes that predicts the development of diabetes. Twenty-five percent of the children and 21 percent of the adolescents studied had impaired glucose tolerance. After testing impaired for glucose tolerance, diabetes may not develop, or may develop later than expected, if healthful lifestyle changes are made.⁶⁶

Fiscal note

In 1997, the estimated direct and indirect costs of diabetes in Texas exceeded \$9 billion.⁶⁷ For the same year, the national health care costs associated with diabetes were estimated at \$98 billion.⁶⁸

Geriatric Chronic Health Conditions

Currently, more than two million Texans are age 65 or older — approximately 10 percent of the population. By 2010, 2.5 million Texans will be 65 or older — slightly more than 10 percent of the projected population.⁶⁹ With this expected growth in the aging population, the number of people affected by diseases of aging will surge in the absence of prevention or cure.⁷⁰

Many of the diseases discussed throughout this report, such as diabetes and cancer, affect the elderly more often and/or more severely than other age groups. However, osteoporosis, arthritis, and Alzheimer's disease tend to affect predominantly the elderly.

Osteoporosis

Osteoporosis is a disease in which bones become weak and are more likely to break. Its causes are unknown, but many risk factors have been identified, including: a thin or small frame; a family history of osteoporosis; being postmenopausal or having had early menopause; abnormal absence of menstrual periods; prolonged use of certain medications such as those used to treat disease like systemic lupus erythematosus, asthma, thyroid deficiencies, and seizures; low calcium intake; physical inactivity; smoking; and excessive use of alcohol.⁷¹ If not prevented or if left untreated, osteoporosis can progress painlessly, without symptoms, until a bone breaks. While osteoporosis is often thought of as an older person's disease, it can strike at any age.⁷²

General data

- Approximately two million Texans have osteoporosis or low bone mass and 80,000 Texans experience osteoporosis-related fractures each year.⁷³
- ▼ Nationwide, 80 percent of those affected by osteoporosis are women (8 million women and 2 million men).⁷⁴

Race/ethnicity data

- Across the nation, 5 percent of African American women aged 50 and older are estimated to have osteoporosis. Ten percent of Hispanic women aged 50 and older, and 20 percent of white women aged 50 and older are estimated to have osteoporosis.⁷⁵



- ▼ In the U.S., 7 percent of white men age 50 and older, 4 percent of African American men 50 and older, and three percent of Hispanic men age 50 and older are estimated to have osteoporosis.⁷⁶

Fiscal and other notes

- Strength training has been shown to help postmenopausal women preserve bone density. In addition to strengthening bone, physical activity reduces the risk of fractures in the elderly by increasing muscle strength and balance, thus reducing the risk of falling.⁷⁷
- National direct expenditures (hospitals and nursing homes) for osteoporotic and associated fractures are estimated at \$13.8 billion.⁷⁸
- Americans spend \$14 million each year on medical and long-term care for osteoporosis and related fractures.⁷⁹
- The medical cost of osteoporosis in Texas was estimated to be \$977 million in 2000.⁸⁰

Arthritis

Arthritis is a term used to describe more than 100 conditions that affect joints and connective tissues, including rheumatoid arthritis, osteoarthritis, gout, and fibromyalgia.⁸¹ While arthritis usually does not cause death, it is a leading cause of disability and suffering in Texas.

Arthritis often begins soon after age 40 from years of wear on joints. Researchers believe that hormones may affect arthritis because women are affected so much more frequently than men. People who are more than 10 pounds overweight have a higher risk for arthritis, especially in weight-bearing joints like the knees. A past severe knee injury that also damages cartilage adds to arthritis risk.⁸²

In 1999, Texas included questions regarding arthritis in the statewide Behavioral Health Risk Factor Surveillance Survey (BRFSS). Table 4.5 shows arthritis information from the Texas survey. In general, the survey found that:

- More than 20 percent of Texans aged 18 and older self-reported arthritis.
- Risk for arthritis by race/ethnicity was highest among whites.
- The proportion of those reporting having arthritis was higher for women than men.
- Prevalence of arthritis increased with increasing age.

Table 4.5 Arthritis
Texas, 1999

| | % reporting arthritis |
|-------------------------|-----------------------|
| All Texans | 21.4 |
| Race/Ethnicity | |
| White | 25.6 |
| African American | 21.2 |
| Hispanic | 14.5 |
| Gender | |
| Males | 17.0 |
| Females | 25.7 |
| Persons Aged 65+ | 54.8 |

Source: Texas Behavioral Risk Factor Surveillance System, 1999.



Other Texas arthritis information

- On the BRFSS in 1999, 1.5 million Texans reported arthritic conditions as a cause of activity limitation. This was 31.3 percent of those reporting arthritis.⁸³

National arthritis information

- General: Nationwide, arthritis affects nearly 43 million Americans, or about one of every six people.⁸⁴
- Race/ethnicity: In the U.S., prevalence rates for whites (15.2 percent) and African American (15.5 percent) are similar but rates for Hispanics are considerably lower (11.3 percent).⁸⁵
- Gender: Nationwide, approximately 38.0 percent of sufferers are male and 62.0 percent are female.⁸⁶
- Age: Nationwide, approximately 45.5 percent of arthritis sufferers are age 65 and older.⁸⁷

Fiscal note

- Arthritis was estimated to cost \$65 billion nationally in 1992, including \$15 billion spent for medical expenses and the remainder for indirect costs due to lost wages and productivity.⁸⁸

Alzheimer's Disease

Alzheimer's disease is a progressive degeneration of the brain that causes a steady decline in memory, thinking, and behavior, which becomes severe enough to interfere with everyday life. How rapidly the disease progresses varies from person to person, but all sufferers experience confusion, personality changes, and impaired judgment. Eventually sufferers can no longer care for themselves. Alzheimer's disease is a terminal illness. As the disease progresses, more and more of the brain is affected, and eventually the areas that control basic life functions, like swallowing and breathing, become irreversibly damaged. Although there are medications that may alleviate some of the symptoms, there is at present no prevention or cure for the disease.

Five risk factors for Alzheimer's are firmly established: increasing age, a genetic predisposition through the gene ApoE4, familial aggregation of cases, Down's syndrome, and head injury.⁸⁹

General data

- 280,000 people in Texas have Alzheimer's disease or a related disorder.⁹⁰
 - ▼ Currently, 4 million Americans have Alzheimer's disease.⁹¹
- In 2000, Alzheimer's was the eighth leading cause of death in Texas, accounting for 3,171 deaths or 2.1 percent of deaths (death rate of 15.6 per 100,000 population).⁹²
 - ▼ In 1999, Alzheimer's disease was the eighth leading cause of death in the U.S., causing 1.9 percent of all deaths.⁹³



Race/ethnicity data

- In Texas in 2000, Alzheimer's was the eighth leading cause of white deaths accounting for 2.5 percent, for a rate of 23.3 per 100,000. Alzheimer's was not among the 10 most prevalent causes of death for Hispanics or African Americans.⁹⁴
- ▼ In 1999 in the U.S., Alzheimer's was the eighth leading cause of death for whites, causing 2.1 percent of white deaths. Alzheimer's was not among the 10 most prevalent causes of death for African Americans or Hispanics.⁹⁵

Gender data

- In Texas, for females aged 75 and older, Alzheimer's is the fifth leading cause of death.⁹⁶ In 2000, of those who died from Alzheimer's, 71.2 percent were women and 28.8 percent were male.⁹⁷ This is consistent with national data.⁹⁸

Age data

- In Texas, approximately 10 percent of persons older than 65 have Alzheimer's, and 47 percent of those older than 85 have the disease.⁹⁹ This is consistent with national data.¹⁰⁰
- Alzheimer's disease is the most common cause of dementia in people aged 65 and older.¹⁰¹

Fiscal and other notes

- According to the National Alzheimer's Association, Alzheimer's disease currently costs the United States \$100 billion a year. Neither Medicare nor many private health insurance plans cover the type of long-term care most patients need.¹⁰²
- Seven out of 10 people with Alzheimer's disease are cared for at home, often by an elderly spouse whose own health may be at risk, or by adult children who have competing demands of child care or jobs outside the home.¹⁰³



Infectious diseases are caused by bacteria, viruses, or other microorganisms. At the turn of the century, the leading causes of death in Texas were all infectious diseases, including influenza, smallpox, and certain enteric diseases. Through vaccine development and effective treatments for certain infectious diseases — along with improvements in drinking water quality and sanitation — a major reduction in their incidence and mortality has occurred.

Though such a reduction is a considerable achievement, infectious diseases are still a significant health concern in Texas. This chapter will highlight some of the infectious diseases currently encountered by Texans, including HIV/AIDS; syphilis; chlamydia; gonorrhea; hepatitis A, B, and C; tuberculosis; pertussis; meningococcal infections; and foodborne infections. The emerging issue of bioterrorism will also be discussed.

Note that many of the infectious diseases discussed below have common modes of transmission that relate to behaviors. For example, approximately 87 percent of the top ten reported infectious diseases are sexually transmitted, including chlamydia, gonorrhea, syphilis, and HIV.¹ Sharing contaminated needles can spread hepatitis and HIV. The morbidity and mortality associated with hepatitis A, hepatitis B, and pertussis can be greatly reduced through appropriate vaccination. Appropriate hand washing can reduce the risk of hepatitis A infection and help prevent foodborne infections.

HIV/AIDS

The Human Immunodeficiency Virus (HIV) is a human retrovirus that infects and slowly depletes a subgroup of white blood cells that are critical to maintaining an effective immune response. An HIV-infected person receives a diagnosis of Aquired Immune Deficiency Syndrome (AIDS) after developing an AIDS-defining condition or on the basis of certain blood tests. Currently there are treatments that can slow the progression of HIV to AIDS, however, there is still no cure for HIV infections or AIDS.

HIV is spread by sexual contact with an infected person, by sharing needles (primarily for drug injection) with someone who is infected, or through transfusion with infected blood or blood products. Babies born to HIV-infected mothers may become infected before or during birth or through breastfeeding. Some groups are at a higher risk of contracting HIV: men who have sex with men, intravenous drug users and their partners, and heterosexuals who have multiple partners. HIV transmission is enhanced when other sexually transmitted diseases (syphilis, gonorrhea, herpes, or chlamydia) are present.²

General data

- At the end of 2001, 68,327 Texans had been diagnosed with HIV or AIDS, 36,309 of which were still living.³
 - ▼ The Centers for Disease Control and Prevention (CDC) estimates that 850,000 to 950,000 U.S. residents are living with HIV infection, one-quarter of whom are unaware of their infection.⁴ In addition, 448,060 U.S. residents have died of AIDS.⁵



- Texas had 2,981 AIDS and 4,241 HIV cases reported in 2001 for rates of 14.4 and 20.5 cases per 100,000, respectively.⁶
 - ▼ Approximately 40,000 new HIV infections occur in the U.S. each year.⁷
 - ▼ In 2000, 40,211 new cases of AIDS were reported in the U.S.⁸

Trends

Texas

- The number of new HIV (not AIDS) cases in Texas remained stable in 2000 and 2001.⁹
- Reported AIDS cases increased 7 percent from 2000 through 2001 in Texas. This marks the first increase in AIDS numbers in five years. There were 2,790 AIDS cases reported in 2000 (versus 2,981 in 2001).¹⁰
- At the end of 1998, 19,686 Texas residents reported to TDH were living with HIV or AIDS. Three years later, at the end of 2001, the reported number of people living with HIV/AIDS in the state had risen to more than 36,000. These counts represent cases of HIV/AIDS that meet two criteria: (1) they are still alive and (2) they have been reported as a case to TDH. Many more people in the state have HIV but have not been tested, do not know yet that they are infected, and have not yet been counted by TDH. The rising numbers of people in Texas living with HIV or AIDS are due to several factors, prime among them are new pharmaceutical therapies that have extended many lives.¹¹

United States

- In the U.S., the estimated number of new AIDS cases and deaths due to AIDS has decreased for all racial/ethnic groups in recent years.¹²

Race/ethnicity data

Texas

- In Texas, the rate of reported HIV cases in 2001 among African Americans (77.0 per 100,000) was more than five times higher than the rate for whites (13.1 per 100,000) or Hispanics (14.0 per 100,000).¹³
- In Texas, the 2001 AIDS rate among African Americans (49.2 cases per 100,000 population) was more than five times higher than the rate for whites (8.7 per 100,000) and nearly four times higher than the rate for Hispanics (12.6 per 100,000).¹⁴



United States

- As of December 31, 2000, of all reported AIDS cases in the U.S. (dead or living) 43 percent were white, 38 percent were African American, and 18 percent were Hispanic.¹⁵
- In the U.S., the rate of AIDS cases reported in 2000 (cases per 100,000 population) was 74.2 among African Americans, 30.4 among Hispanics, and 7.9 among whites.¹⁶

Gender data

Texas

Table 5.1 provides details of AIDS and HIV cases reported in Texas by gender and race/ethnicity for 2001. The tabular information shows some significant differences among racial or ethnic groups and between genders.

**Tabel 5.1 AIDS & HIV Cases Reported in Texas
by Gender & Race/Ethnicity, 2001**

| Gender & Race/Ethnicity | AIDS Cases | % | Rate† | HIV Cases | % | Rate† |
|------------------------------------|-------------------|----------|--------------|------------------|----------|--------------|
| Male | | | | | | |
| White | 860 | 37 | 15.8 | 1,218 | 40 | 22.3 |
| African American | 761 | 33 | 67.5 | 1,102 | 36 | 97.7 |
| Hispanic | 692 | 30 | 20.9 | 712 | 23 | 21.5 |
| All Others* | 21 | 1 | — | 46 | 1 | — |
| Totals | 2,334 | 100 | 22.8 | 3,078 | 100 | 30.1 |
| Female | | | | | | |
| White | 116 | 18 | 2.0 | 248 | 21 | 4.3 |
| African American | 394 | 61 | 32.3 | 705 | 61 | 57.8 |
| Hispanic | 129 | 20 | 4.0 | 202 | 17 | 6.3 |
| All Others* | 8 | 1 | — | 8 | 1 | — |
| Totals | 647 | 100 | 6.2 | 1,163 | 100 | 11.1 |
| Total Cases | 2,981 | | 14.4 | 4,241 | | 20.5 |

Source: Texas Department of Health, Bureau of HIV & STD Prevention.

*Includes cases of unknown race, therefore a rate is not calculated.

†Cases per 100,000 population.

- The AIDS rate for Texas males in 2001 was 22.8 cases per 100,000 and the HIV rate was 30.1 per 100,000. For females, the AIDS rate was 6.2 cases per 100,000 and the HIV rate was 11.1 per 100,000. Because HIV cases represent more recent infections than AIDS cases, the higher rates among females with HIV compared to those with AIDS is an indicator of the increasing spread of new infections among females.¹⁷

United States

- About 70 percent of the approximately 40,000 new HIV infections occurring in the U.S. each year are among men and 30 percent among women.¹⁸



- In the U.S., from 1985 to 2000, the proportion of AIDS cases reported in women increased from 7 percent to 25 percent.¹⁹

Age data

Texas

- In Texas, new HIV cases in 2001 occurred most frequently in both the 30-to-39 age group (50.3 cases per 100,000) and the 20-to-29 age group (41.3 per 100,000).²⁰
- In Texas, the age distribution of newly reported AIDS cases in 2001 was highest in the 30-to-39 age group with a rate of 38.2 cases per 100,000 population. The age groups with the next highest rates were 40 to 49 (28.2 per 100,000) and 20 to 29 (15.6 per 100,000).²¹

United States

- Of the approximately 40,000 new HIV infections occurring in the U.S. each year, half occur in people younger than 25 years of age.²²
- In the U.S., AIDS is now the fifth leading cause of death among people ages 25–44 and is the leading cause of death for African American men in this age group. Among African American women in this age group, AIDS ranks third as cause of death.²³

Fiscal notes

- In 1997 dollars, the annual medical cost of HIV in the U.S. was estimated at \$4.5 billion.²⁴
- The Texas HIV Medication Program makes drugs available to HIV-infected persons in Texas who meet basic eligibility criteria. In fiscal year 2001, this program provided HIV medications to an average of 6,000 clients per month. The average cost per client was about \$700 per month, and overall the program spent over \$50.5 million dollars in that year alone.²⁵

Syphilis

Syphilis is a bacterial STD that is curable when treated with appropriate antibiotics. The acute form of the disease is characterized by primary lesions (an ulcer at the site of infection) followed by secondary infection (manifestations that include rash, mucocutaneous lesions, and adenopathy). Untreated syphilis progresses into a chronic disease with long periods of latency. Data presented in this report focuses on syphilis cases diagnosed and reported in the primary and secondary (P&S) stages of the disease.²⁶

Syphilis is passed from person to person through direct contact with a syphilis sore. Sores occur mainly on the external genitals, vagina, or anus, but can also occur on the lips and in the mouth. Transmission of the organism occurs during vaginal, anal, or oral sex. Pregnant women with the disease can pass it to their babies.²⁷



General data

Texas

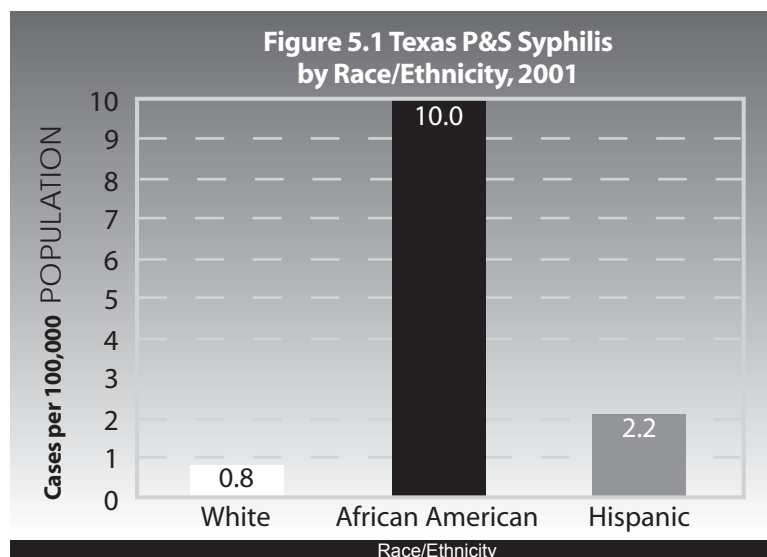
- Statewide, 479 cases of P&S syphilis were reported in 2001. This represented a 20 percent increase from cases reported in 2000 and ended the downward trend for P&S syphilis in Texas over the previous nine years.²⁸
- Four major metropolitan counties, Dallas, Harris, Tarrant, and Bexar, accounted for nearly 70 percent of all P&S syphilis cases reported in 2001.²⁹
- In 2001, Texas experienced sustained increases in P&S cases in several counties including Dallas, Harris, Tarrant, Potter, Travis, and El Paso. Bexar and Wichita counties reported an increased number of cases beginning in 2000 that remained elevated in 2001. Sustained increases in syphilis in these areas have typically centered among men who have sex with men, prostitutes, and crack-cocaine users.³⁰

United States

- P&S syphilis rates in the U.S. reached epidemic proportions in 1990 (20.3 cases per 100,000 people) but have dramatically decreased since that time to 2.2 cases per 100,000 in 2000.³¹

Race/ethnicity data

- In Texas in 2001, the rate of P&S syphilis among African Americans was 10.0 cases per 100,000 population. Although less than one-fifth the 1995 rate of 53.2, the rate among African Americans remained extremely high compared with rates for Hispanics (2.2 cases per 100,000 population) and whites (0.8 cases per 100,000).³² See Figure 5.1.



Source: Texas Department of Health, Bureau of HIV/STD Prevention.



- In the U.S. in 2000, P&S syphilis rates per 100,000 by race or ethnicity and sex were as follows:

- ▼ white men, 0.7;
- ▼ white women, 0.4;
- ▼ African American men, 15.1;
- ▼ African American women, 10.7;
- ▼ Hispanic men, 2.6; and
- ▼ Hispanic women, 1.0.³³

Gender data

- In Texas, men accounted for 64 percent of reported P&S syphilis cases in 2001.³⁴
- ▼ In 2000, nationwide there were 44 percent more cases of syphilis among men than women.³⁵

Age data

- In Texas, the age distribution of P&S syphilis cases was fairly even across the three age groups of most common occurrence; 15–24 (27 percent), 25–34 (29 percent), and 35–44 (26 percent).³⁶
- ▼ In the U.S., women ages 20–24 and men ages 25–29 were the age groups with the highest P&S syphilis rates in 2000.³⁷

Fiscal notes

- Syphilis is estimated to cost \$43.8 million (1997 U.S. dollars) in direct medical care annually in the U.S.³⁸

Chlamydia

Chlamydia is another bacterial STD and one of the most common causes of sexually transmitted infections. When diagnosed, chlamydia is easily treated and cured with antibiotics. However, many infected individuals are asymptomatic and do not seek treatment. In fact, approximately 70 percent of infected women and 25 percent of infected men do not show symptoms.³⁹ When left untreated, chlamydia can have severe consequences, including pelvic inflammatory disease and sterility.⁴⁰

The primary risk factor for chlamydia is sexual activity with infected individuals; therefore, persons who engage in high-risk sexual activity (i.e., multiple sex partners and lack of barrier contraception) are at greater risk of contracting chlamydia. The more sex partners a person has, the greater the risk of chlamydia infection. Babies are at risk of acquiring a chlamydial infection from their infected mother. Sexually active women are especially susceptible to the chlamydia bacterium because of the characteristics of the cells that form the lining of the cervical canal.⁴¹

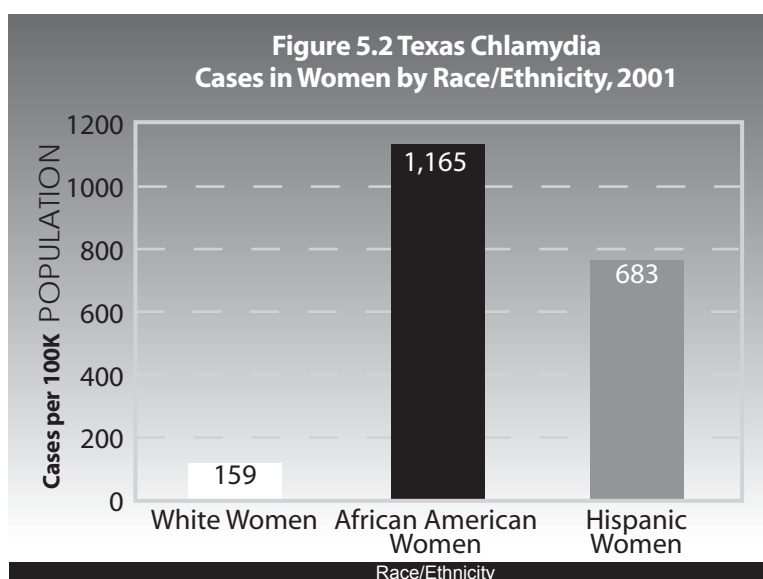


General data

- In Texas, reports of chlamydia in 2001 totaled 69,934, a 2 percent increase from 68,758 cases in 2000. Increasing case reports may be a reflection of increased testing and screening for chlamydia — not actual increases in disease burden.⁴²
- ▼ In the U.S., chlamydia is believed to be declining overall primarily because of increased efforts to screen and treat women. Chlamydia is estimated to have declined from well over four million annual infections in the early 1980s to the current level of three million.⁴³

Race/ethnicity data

- In Texas, African American women had the highest chlamydia rate in 2001 (1,165 cases per 100,000) followed by Hispanic and white women (683 and 159 cases per 100,000 population, respectively).⁴⁴ See Figure 5.2.



Source: Texas Department of Health, Bureau of HIV/STD Prevention.

- ▼ In the U.S., in 2000, the reported rate of chlamydia among African American females was 9 times higher than the rate among white females (1,540 and 174 cases per 100,000, respectively). The chlamydia rate among African American males was 13 times larger than that among white males (478 and 36 per 100,000, respectively).⁴⁵ The chlamydia rate among Hispanic females in 2000 was 712 cases per 100,000 population; for Hispanic males, 170 per 100,000 population.⁴⁶

Gender data

- In Texas, of the total chlamydia cases reported in 2001, 83 percent were among women. Women are more likely to be screened for chlamydia during clinical exams for family planning, prenatal care, and routine Pap smear testing. Because of the increased risk of severe outcomes, including the potential for pelvic inflammatory disease, ectopic pregnancy, and the possibility of infecting a newborn child, chlamydia-screening programs almost always focus on women. Therefore, men are less likely to be tested and diagnosed.⁴⁷



- ▼ In the U.S., reported chlamydia rates in women greatly exceed those in men largely because screening programs have been primarily directed at women. True rates are probably far more similar for women and men.⁴⁸

Age data

- In Texas, more than 74 percent of all reported chlamydia patients were 15–24 years of age.⁴⁹
- ▼ In the U.S., 74 percent of chlamydia cases in 2000 were reported among people 15–24 years old.⁵⁰

Fiscal and other notes

- Women who are infected with chlamydia are three to five times more likely to contract HIV when exposed during sexual activity.⁵¹
- Chlamydia is estimated to cost \$374.6 million (1997 U.S. dollars) in direct medical care annually in the U.S.⁵²

Gonorrhea

Gonorrhea is a common bacterial STD that can easily grow in mucuous membranes of the body. If left untreated, gonorrhea may lead to serious complications such as sterility in men and pelvic inflammatory disease and ectopic pregnancy in women. Gonorrhea is spread through sexual contact (vaginal, oral, or anal). The primary risk factor for gonorrhea is sexual activity with infected individuals; therefore, persons who engage in risky sexual activity (i.e., multiple sex partners and lack of barrier contraception) are at greater risk of contracting gonorrhea.⁵³ The more sex partners a person has, the greater the risk of gonorrheal infection. Babies with an infected mother are at risk of becoming infected.⁵⁴

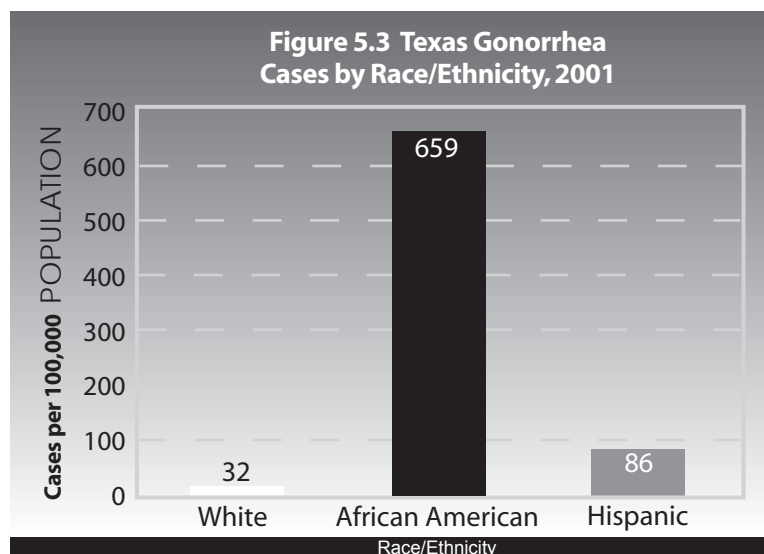
General data

- In Texas, 30,116 cases of gonorrhea were reported in 2001, for a rate of 145 cases per 100,000 population.⁵⁵
- The 30,116 cases reported in 2001 represent an almost 8 percent decrease as compared with 2000. Gonorrhea levels in Texas have remained fairly consistent at around 30,000 cases per year for the past four years.⁵⁶
- ▼ Across the U.S., reported gonorrhea rates declined steadily from 1975 to 1997. In 1998, the U.S. gonorrhea rate increased and since then has remained stable.⁵⁷



Race/ethnicity data

- In Texas, the gonorrhea rate for African Americans in 2001 (659 cases per 100,000) was nearly eight times higher than the rate for Hispanics (86 per 100,000) and more than 20 times higher than the rate for whites (32 per 100,000).⁵⁸ See Figure 5.3.



Source: Texas Department of Health, Bureau of HIV/STD Prevention.

- In Texas, African American men had the highest gonorrhea rate of all race/ethnicity–gender groups at 718 cases per 100,000 population.⁵⁹
 - ▼ In the U.S., the gonorrhea rate among African Americans in 2000 was 827 cases per 100,000, compared to 28 per 100,000 among whites and 78 per 100,000 among Hispanics.⁶⁰

Gender data

- In Texas, the rate among women in 2001 (149 cases per 100,000) was only slightly higher than the rate for men (141 per 100,000).⁶¹
 - ▼ In the U.S., the rate of gonorrhea among men and women in 2000 (135 and 128 cases per 100,000, respectively) was consistent with rates reported in recent years.⁶²

Age data

- In Texas, among age groups, the highest rate for women was found in those ages 15 to 19 (816 per 100,000) followed by those ages 20 to 24 (715 per 100,000). Men in these age groups also had higher rates: 378 cases per 100,000 for the 15–19 age group, 581 per 100,000 for those 20 to 24, and 320 per 100,000 for those 25 to 29.⁶³
 - ▼ In the U.S., gonorrhea rates are highest among females between the ages of 15 and 19 and males between the ages of 20 and 24, regardless of race/ethnicity.⁶⁴



Fiscal note

- Health economists estimate that the national annual cost of gonorrhea and its complications is close to \$1.1 billion.⁶⁵

Hepatitis A

Hepatitis A virus (HAV) is one of the most commonly reported infectious diseases in Texas. The virus is transmitted by the fecal-oral route, usually by an infected person handling food or by produce or other food items that are not cooked coming in contact with fecally contaminated water. Transmission has also been associated with injecting-and non-injecting-drug use and sexual contact. Persons at great risk are household and other close contacts of infected persons, as well as adults and children in the same childcare facility as an infected diapered child.⁶⁶

General data

Texas

- In 1999 2,516 cases of HAV were reported from 154 Texas counties.⁶⁷
- Statewide, 4 persons died of HAV infections in 1999.⁶⁸
- In Texas, HAV has not followed a clear trend for the period 1990–99. The fewest case reports occurred in 1992 (1,828); the most, in 1997 (4,511).⁶⁹

United States

- 17,047 cases of HAV were reported in the United States in 1999.⁷⁰
- In the U.S., cyclic increases in the incidence of HAV have occurred approximately every decade. The last nationwide increase occurred in 1995. Between epidemics, HAV continues to occur at relatively high rates.⁷¹

Race/ethnicity data

- In Texas in 1999, Hispanics had the highest incidence of HAV at 19.6 per 100,000, whites had a rate of 5.0 per 100,000, and African Americans had a rate of 2.0 per 100,000.⁷²

Gender data

- In Texas, there are some significant differences in the incidence rate of HAV infection between males and females and in different age groups, as demonstrated in Table 5.2.⁷³



**Table 5.2 Incidence of Hepatitis A
Per 100,000 Population, Texas, 1999**

| Age Group Years | Male HAV Incidence Per 100,000 | Female HAV Incidence Per 100,000 |
|--------------------|-----------------------------------|-------------------------------------|
| 20–29 | 14.7 | 12.6 |
| 30–39 | 17.2 | 9.3 |
| 40–49 | 9.2 | 7.0 |

Source: Texas Department of Health, Infectious Disease Epidemiology and Surveillance Division.

- ▼ In the U.S. in 1999, the incidence of HAV in males was 7.73 per 100,000; for females, the incidence was 4.78.⁷⁴

Age data

- In Texas, children ages 5–9 typically have the highest rates of HAV. In 1999, the rate was 29.5 per 100,000.⁷⁵ See table 5.2 for other age-related data for Texas.
- ▼ In the U.S., the reported incidence of HAV is highest among children 5–14 years of age with approximately one-third of reported cases involving children less than 15 years of age.⁷⁶

Fiscal and other notes

- Two vaccines are currently in use to prevent hepatitis A infection. The vaccines are available in a two-dose series and can be used in persons over the age of 2 years. In August 1999, legal mandates went into effect requiring vaccination against HAV for all school-age children who live in the 32 Texas counties within 100 kilometers of the Texas-Mexico border. In August 2000, legal mandates went into effect requiring all who attend child-care facilities in those 32 counties to be vaccinated against HAV.⁷⁷
- Average costs (direct and indirect) of HAV range from \$1,817 to \$2,459 per case for adults and from \$433 to \$1,492 for children less than 18 years of age.⁷⁸

Hepatitis B

Hepatitis B virus (HBV) is known to cause acute and chronic hepatitis. HBV is the most common known cause of chronic viremia, with an estimated 200 to 300 million chronic carriers worldwide. HBV became a vaccine-preventable disease in 1981 when the first hepatitis B vaccine was licensed for use in the United States. The disease has been reportable in Texas since 1971. HBV is spread through contact with



infected blood and other body fluids. Transmission can occur through sexual contact with an HBV carrier, use of contaminated needles, accidental needle-stick injuries with contaminated needles, or tattooing or body piercing with contaminated instruments. Perinatal transmission occurs when an infant is exposed to infectious maternal blood during birth. Additionally, one in every four persons infected with HBV has no identified risk for this disease.⁷⁹

Severity ranges from asymptomatic infection to acute hepatitis with severe complications. The risk of chronic HBV infection varies inversely with age at infection: 6–10 percent of acute HBV infections among adults result in chronic infection, whereas 70–90 percent of infected newborns, if not treated with hepatitis B immune globulin (HBIG) and hepatitis B vaccine at birth, become lifelong carriers of HBV and are at risk for chronic liver disease and cancer later in life.⁸⁰

Persons at risk for HBV include: infants born to infected mothers, persons having sex with infected persons or multiple partners, injecting-drug users, health care workers, men who have sex with men, and hemodialysis patients.

General data

Texas

- In Texas, a total of 864 cases of HBV were reported from 88 counties in 1999.⁸¹
- In Texas, three deaths from HBV were reported in 1999.⁸²
- In Texas, during 1990–99, more than 1,200 cases were reported in each year except 1999 (864 cases).⁸³

United States

- There are an estimated 200,000 new cases of HBV each year in the United States (1999).⁸⁴
- In the U.S., reported cases of acute HBV have decreased by more than 60 percent during the past decade, from 21,102 cases in 1990 to 7,694 cases in 1999.⁸⁵

Race/ethnicity data

- In Texas in 1999, African Americans had the highest HBV incidence (3.5 per 100,000) among the three major racial/ethnic groups.⁸⁶ The 1999 rate for whites was 1.7 and for Hispanics was 2.4.⁸⁷
 - ▼ According to a national survey, the prevalence of HBV is higher among African Americans (12 percent) than among whites (3 percent) or Mexican-Americans (4.4 percent).⁸⁸

Gender data

- In Texas, males had a higher HBV incidence (4.6 per 100,000) than did females (3.9 per 100,000) in 1999.⁸⁹



- ▼ In 1999, in the U.S. the HBV incidence for males was 3.41 per 100,000; for females, 2.22 per 100,000.⁹⁰

Age data

- In Texas in 1999, the highest rates of HBV were reported among persons between the ages of 20 and 40 years, with persons ages 20 through 29 years having the highest rate (7.4 per 100,000).⁹¹
 - ▼ In the U.S., adults and adolescents account for the majority of reported cases of acute HBV, with the highest rates observed among 25–39-year-olds.⁹² In 1999, 25–39-year-olds had an incidence of 5.59, and 15–24-year-olds had an incidence of 3.48 per 100,000. These two age groups accounted for more than 60 percent of the total incidence in 1999.⁹³

Special notes: perinatal hepatitis B

- Children of HBV-infected mothers are at high risk of becoming infected with HBV perinatally or through person-to-person transmission during the first five years of their lives. Hepatitis B infection can be easily identified, and transmission to infants during birth can be prevented. Immunotherapy provided to infants of HBV-infected mothers will prevent 95 percent of subsequent infections. Legislation that went into effect on September 1, 1999, requires that pregnant women in Texas be screened for HBV infection at their first prenatal examination and at delivery by the physician or other person who attends a pregnant woman during gestation or at delivery.⁹⁴
- It is estimated that 1,200 infants are born each year to women positive for hepatitis B surface antigen in Texas.⁹⁵
 - ▼ Nationally, an estimated 20,000 infants are born to mothers infected with HBV each year.⁹⁶

Fiscal and other notes

- Hepatitis B vaccine is the best protection against HBV. The vaccine is now required for children. Also, adults engaging in high-risk behaviors that place them at an increased risk for HBV (intravenous drug users and people engaging in high-risk sexual behavior) should be vaccinated, along with health care workers.
- In 1997 dollars, the estimated national annual medical costs of HBV total \$51.4 million.⁹⁷

Hepatitis C

Hepatitis C infection is the most common chronic blood-borne infection in the U.S.⁹⁸ Hepatitis C virus (HCV) is the leading cause of chronic liver disease in the U.S.⁹⁹ Persons at risk for HCV include: anyone who had a blood transfusion prior to 1992, persons having contact with infected blood or contaminated needles, infants born to infected mothers, and persons with multiple sex partners. It is estimated that 60–70



percent of persons who contract the virus have no distinct symptoms and may go undiagnosed for many years.¹⁰⁰ Until January 2000, only acute hepatitis C was reportable by law; since then, all newly diagnosed cases of HCV, whether acute or chronic, are reportable.¹⁰¹

General data

Texas

- The actual number of individuals infected with HCV in Texas is unknown. In 1999, 359 cases of acute HCV were reported to TDH. The statewide rate for acute HCV in 1999 was 1.8 cases per 100,000 population.¹⁰²
- In order to better understand the infected population in Texas, the Texas Department of Health examined all positive hepatitis C results (acute and chronic) for the last quarter of 1999. TDH received 5,206 positive results during the period; 3.2 percent were classified as acute.¹⁰³

United States

- It is estimated that 3.8 million Americans (1.8 percent) have been infected with HCV, of whom 2.7 million are chronically infected.¹⁰⁴
- CDC estimated that the incidence of acute hepatitis C infection in the U.S. decreased from an average of 240,000 new cases per year in the 1980s to about 40,000 in 1998.¹⁰⁵ The reduction is due to a decrease in transfusion-associated infections because of careful blood-donor selection and the screening of the blood supply for HCV. A decrease in HCV transmission among injecting-drug users may be related to safer needle practices.¹⁰⁶

Race/ethnicity data

- In Texas in 1999, Hispanics had the highest rate of acute HCV (1.7 per 100,000), whites had a rate of 1.1, and African Americans had a rate of 1.0. However, data on race/ethnicity are incomplete; many records fail to record these data, or record them as unknown.¹⁰⁷
 - ▼ The nationwide prevalence of antibody to HCV, according to the third National Health and Nutrition Examination Survey (NHANES III) from 1988 through 1994, was: 1.8 per 100,000 overall; 1.5 for whites, 3.2 for African Americans, and 2.2 for Mexican-Americans.¹⁰⁸

Gender data

- In Texas in 1999, males had a higher rate of acute HCV (2.3 per 100,000) than females (1.1 per 100,000).¹⁰⁹
 - ▼ In the U.S. in 1999, the incidence of HCV in males was 1.42 and 0.85 for females.¹¹⁰



Age data

- In Texas, the highest incidence of acute HCV in 1999 was in the 40–49 age group.¹¹¹
 - ▼ In the U.S. in 1999, close to 85 percent of the HCV incidence was in ages 25–64. The 25–39 age group had an incidence of 1.62 per 100,000, the 40–64 group had an incidence of 2.03.¹¹²

Special notes

- There is no vaccine to prevent HCV.
- While treatment is available for HCV, a successful response to therapy occurs in only 4 of 10 persons.¹¹³

Tuberculosis

Tuberculosis is a bacterial disease caused by *Mycobacterium tuberculosis*. These bacteria primarily infect the lungs and are transmitted from person to person by inhalation of droplet nuclei containing the bacteria. Patients with pulmonary or laryngeal tuberculosis generate nuclei when they talk, cough, or sneeze. A majority of patients experience pulmonary tuberculosis characterized by fever, night sweats, weight loss, breathing difficulties, and coughing.

Treatment of each case of TB requires a minimum of six months of treatment with two to four different drugs and can be psychologically, physically, and economically demanding. Occasionally, the demands overwhelm patients leading them to become non-compliant with their treatment regimens. Any interruption in treatment significantly increases the risk of the patient developing multi-drug-resistant TB.¹¹⁴

Risk factors for TB include foreign birth, alcohol abuse, diabetes, residence in a correctional facility within the last two years, HIV infection, homelessness, non-injecting drug abuse, and injecting drug abuse.¹¹⁵

General data

Texas

- In 2001, 1,643 cases of TB were reported in Texas.¹¹⁶
- In 2001, Texas had 41 reported cases of TB that were resistant to isoniazid but not rifampin (common drugs for treating TB). Eight cases were resistant to rifampin but not isoniazid. Fourteen cases were resistant to both isoniazid and rifampin.¹¹⁷
- Between 1994 (when 2,542 cases were reported) and 2000 the number of TB cases in Texas decreased 41 percent. However, from 2000 to 2001 cases increased 9 percent (from 1,506 cases to 1,643 cases).¹¹⁸



United States

- In the U.S. in 2000, 16,377 cases of TB were reported (5.8 cases per 100,000 population), representing a 39 percent decrease in the number of cases from 1992 (10.5 cases per 100,000), when the number of cases (26,673) peaked during the resurgence of TB in the U.S.¹¹⁹ In 2001, the provisional numbers of TB cases decreased for the ninth straight year to an all-time low of 15,991 cases (5.6 cases per 100,000 population).¹²⁰
- In 2000, the U.S. had 924 reported cases of TB that were resistant to one of the most common drugs for TB (isoniazid). Of those 924 cases, 141 were resistant to both isoniazid and rifampin.¹²¹

Race/ethnicity data

- In 2001, 84 percent of TB cases in Texas were reported in minorities. Of these minority TB cases, 57 percent occurred in Hispanics, 30 percent in African Americans, and 13 percent in Asians.¹²²
- Foreign-born persons accounted for 43 percent of TB cases in Texas for 2001, an increase from 26 percent in 1995.¹²³
 - ▼ In the U.S. in 2000, the rate of TB per 100,000 for African Americans was 15.2, for Hispanics 10.8, and for whites 1.9.¹²⁴

Gender data

- In Texas, 65 percent of TB cases in Texas for 2001 were reported among males.¹²⁵
 - ▼ In the U.S. in 2000, the incidence of tuberculosis for males was 7.68 per 100,000; for females, 4.42.¹²⁶

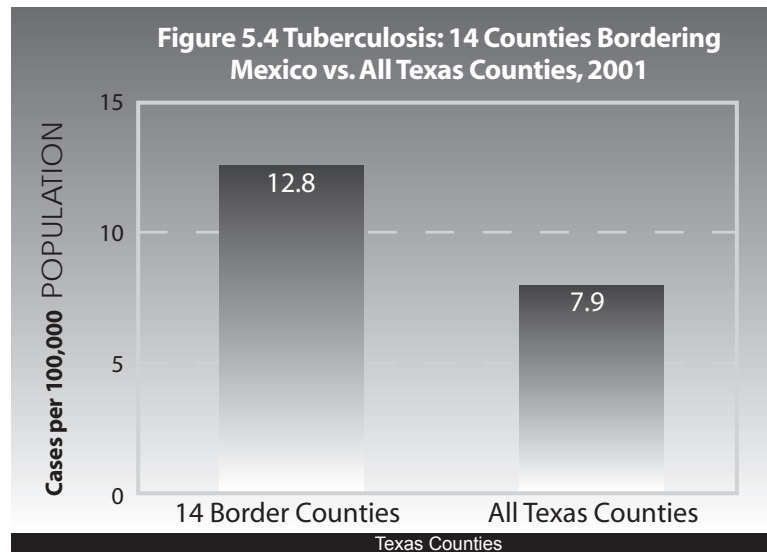
Age data

- In Texas in 2001, the age group with the highest incidence of TB was ages 65 and older (13.5 per 100,000). Two other age groups had rates higher than 10 per 100,000: 45–54 — 11.9, and 55–64 — 10.7.¹²⁷
 - ▼ In the U.S. in 2000, 34 percent of TB cases were in persons ages 25–44.¹²⁸

Special note

High TB rates in the Mexican states that border Texas contribute to a higher rate for TB in the Texas counties near the Mexican border as compared with the rest of the state (Figure 5.4). In 2001, 14 border counties had a TB rate of 12.8 cases per 100,000, which is 1.6 times the Texas TB rate of 7.9. Many people cross the border daily, providing ample opportunity for TB to spread from person to person. Also, the transient lifestyle of many persons along the border hinders treatment.¹²⁹





Source: Texas Department of Health, Tuberculosis Elimination Division.

Fiscal note

- If drug-resistant TB is allowed to develop, the cost of treating a case can escalate from \$2,300 to over \$250,000.¹³⁰

Pertussis — childhood immunization

Many diseases are preventable via vaccination. This section will highlight *pertussis* (also called *whooping cough*) because it particularly illustrates the importance of timely vaccinations. Although pertussis is vaccine-preventable, Texas has experienced high levels of pertussis morbidity, with an average of more than 150 cases reported each year since 1990. When the vaccine to prevent pertussis is appropriately received, morbidity is greatly reduced in young children.¹³¹

Pertussis is a highly contagious upper respiratory illness. It is caused by bacteria that live in the nose, mouth, and throat and are sprayed into the air when an infected person sneezes, coughs, or talks. Others nearby can then inhale the bacteria. Coughing fits associated with pertussis can be very serious. After coughing, a person may have difficulty catching his breath, vomit, or become blue in the face from lack of air. Pertussis is especially dangerous for infants, potentially causing breathing problems, pneumonia, and swelling of the brain that can lead to seizures and brain damage. Pertussis can also cause death.¹³²

Prior to the availability of pertussis vaccine in the mid 1940s, pertussis was a common illness among children, with more than 180,000 cases reported nationally in 1940. The number of cases reported to the CDC has dropped by more than 98 percent since the vaccine was licensed.¹³³

During 2000, according to the National Immunization Survey, national vaccination coverage for the 4:3:1 series of vaccines (which includes pertussis) for children ages 19–35 months was 77.6 percent. The national averages for the years 1995–99 were 76.2, 78.4, 77.9, 80.6, and 79.9.¹³⁴

Pertussis problems in Texas are symptomatic of larger immunization problems. According to the 2000 National Immunization Survey, Texas currently ranks last among all states for the 4:3:1 series of vaccines for children 19–35 months of age — 69.5 percent.¹³⁵ Except in 1995, when Texas reached the national level



(76 percent), the state has always ranked below the national average for vaccination rates for the 4:3:1 series. Since 1996, the Texas level has remained essentially unchanged at 75 percent until 2000, when the rates decreased to 69.5 percent.¹³⁶

General data

Texas

- In Texas in 2001, 615 cases of pertussis were reported and five Texans died from the disease. In 2000 there were 327 cases of pertussis and two deaths from the disease. In 1999 there were 152 cases of pertussis and one pertussis death.¹³⁷
- In Texas, a community-wide outbreak of pertussis in Dallas County resulted in a five-fold increase in cases in 2000: 124 cases were reported in the county in 2000, compared with only 24 cases in 1999. Harris County had almost three times as many cases in 2000 as in 1999: 44 cases in 2000, compared with 16 in 1999. Pertussis in Dallas and Harris counties alone accounted for more than half of the state's cases in 2000. In 2001, there were significant increases in pertussis incidence due to outbreaks in Midland, Cameron, Hidalgo, and Travis counties.¹³⁸

*United States*¹³⁹

- In 1999 7,288 cases of pertussis were reported in the U.S., for an incidence of 2.67 cases per 100,000.
- Since 1980, reported cases of pertussis have increased nationally.

Race/ethnicity data

- In Texas in 1999, the incidence of pertussis was approximately 0.64 per 100,000 for whites, 0.80 for Hispanics, and 0.78 for African Americans. In 2000, the incidence rose to approximately 1.0 for whites, 2.67 for Hispanics, and 1.51 for African Americans.¹⁴⁰
 - ▼ In the U.S. in 1999, the incidence of pertussis per 100,000 was approximately 2.16 for whites, 2.98 for Hispanics, and 1.14 for African Americans.¹⁴¹

Gender data

- In Texas in 2001, the incidence was higher for females (3.29 per 100,000) versus males (2.51 per 100,000).¹⁴²
 - ▼ Nationally in 1999, the incidence of pertussis was 2.51 for males and 2.82 for females.¹⁴³



Age data

- In Texas in 1999, the highest pertussis rate by age group by far was among children less than 1 year old (24.9 per 100,000). The next highest group was 10–14-year-olds at 1.0.¹⁴⁴
- ▼ In the U.S. in 1999, nearly 70 percent of all pertussis cases were among children up to age 14 (the rate for children less than 1 year old was 56.87; for children ages 1–4, 5.52; and for children ages 5–14, 5.22).¹⁴⁵

Special notes

The reasons for the rise in reported U.S. pertussis cases since 1980 are unknown, but could include increased awareness of pertussis among health care providers, increased use of more sensitive confirmatory tests, and better reporting of cases to health departments.¹⁴⁶ However, these changes primarily affected reporting for adolescents and adults. The increased incidence in infants suggests a true increase in pertussis circulation.¹⁴⁷

Of the 7,288 cases of pertussis reported during 1999 in the U.S., 27 percent occurred among children younger than 7 months, too young to have received the recommended three doses of a pertussis-containing vaccine; 11 percent were among preschool-age children (i.e., those ages 1–4 years); and 28 percent were among children ages 10–19 years. Since 1995, the coverage rate with at least three doses of a pertussis-containing vaccine has been 95 percent among U.S. children ages 19–35 months. Because vaccine-induced immunity wanes approximately 5–10 years after pertussis vaccination, adolescents can become susceptible to disease. Since 1990, the incidence of pertussis among preschool-aged children has not changed, but the incidence among adolescents has increased in some states.¹⁴⁸

Meningococcal Infection

Meningococcal diseases include all invasive infections caused by the bacterium *Neisseria meningitidis*. The most common presentations are meningitis and/or meningococcemia, but other clinical presentations such as joint inflammation, lung inflammation, or inflammation of the heart lining may also occur.¹⁴⁹ The bacteria causing meningococcal infection is spread by direct contact with saliva, as in kissing, immediate sharing of unwashed eating utensils and drinking containers, sneezing, and coughing. Symptoms include fever, severe headache, stiffness of the neck, nausea or vomiting, and frequently a skin rash of small, purplish-red spots. Although meningococcal infection can be treated with antibiotics, 10–20 percent of people with this illness will die. Vaccine is available only for meningococcal serogroups A, C, Y, and W135. The vaccine takes up to 2 weeks to become effective and only provides immunity for a few years. The vaccine is ineffective for children under 2 years old.¹⁵⁰ Therefore, vaccination is only recommended in certain outbreak situations and for college freshmen, particularly those residing in group living situations such as dormitories or residence halls.¹⁵¹

Persons who have certain medical conditions are at increased risk for developing meningococcal disease, particularly persons who have deficiencies in the terminal complement pathway. Increased risk for meningococcal infection is also associated with recent viral infection, household crowding, chronic underlying illness, and both active and passive smoking. During outbreaks, bar or nightclub patronage and alcohol use have also been associated with higher risk for disease.¹⁵²



General data

Texas

- In 1999 in Texas, 106 cases of invasive meningococcal infection were reported.¹⁵³
- In Texas, 9 patients died from meningococcal infections during 1999.¹⁵⁴
- Over the past 10 years, the number of Texas cases has ranged from 93 to 253 per year, for a yearly average of 163. The yearly incidence rate in Texas has ranged from 0.5 to 1.4 cases per 100,000 population. The rise in average annual occurrence from 1994 to 1996 is largely attributable to an outbreak in the northeastern part of the state.¹⁵⁵

United States

- Each year 2400–3000 cases of meningococcal disease occur in the U.S., resulting in a rate of 0.8–1.3 per 100,000 population. The case-fatality rate is 10 percent. In addition, 11–19 percent of survivors have neurologic disability, limb loss, hearing loss, or some other permanent disability.¹⁵⁶
- From 1989 to 1998, rates of meningococcal disease in the U.S. have remained at or near one case per 100,000 population.¹⁵⁷

Race/ethnicity data

- In Texas in 1999, the distribution of patients by race/ethnicity was 39 percent white, 20 percent Hispanic, and 12 percent African American. The race/ethnicity of 28 percent of patients was not reported, and 1 percent were reported as “other.”¹⁵⁸
- ▼ In a recent multi-state, case-control study, race was not associated with increased risk.¹⁵⁹

Gender data

- In Texas, of the 106 cases in 1999, 44 were in males, 45 in females, and 17 unknown.¹⁶⁰
- ▼ In the U.S. in 1999, the incidence per 100,000 for males was 0.92 per 100,000; for females, 0.90.¹⁶¹

Age data

- In Texas in 1999, 59 percent of meningococcal infections occurred in children under 18 years of age.¹⁶²
- ▼ In the U.S. during 1991–98, the highest rate of meningococcal disease occurred among infants aged less than 1 year; however, the rate for persons ages 18–23 years was also higher than that for the general population (1.4 per 100,000).¹⁶³



Foodborne Infections

Foodborne disease results from consuming contaminated foods or beverages. There are a variety of pathogens or disease-causing microbes, including bacteria, viruses, fungi, and parasites, that can cause illness when consumed. Often, toxins produced by these microbes — either in food before consumption or in the intestines — cause illness.¹⁶⁴ Each year in the U.S., an estimated 76 million persons experience foodborne illnesses.¹⁶⁵

Most foodborne illnesses occur as a result of one or both of the following events: consumption of organisms and/or toxins in food derived from infected animals or contaminated by feces of an infected animal or person; or improper temperature (not hot enough or not cold enough) during preparation or storage of prepared food. Inoculation of food items with pathogens can be prevented by thoroughly cleaning surfaces and utensils between preparation of uncooked foods such as meat and preparation of foods such as produce that does not get cooked. Thorough cooking can destroy bacteria and toxins present in meat. Refrigeration and heat-holding temperatures must be properly maintained to prevent growth of bacteria and elaboration of toxins. All persons who handle food must follow strict hand-washing protocols to avoid fecal-oral transmission if they are infected with a pathogen and to avoid cross-contamination of a pathogen from one food to another. Some of these illnesses can also be spread person-to-person in child-care facilities and by other forms of close contact, including sexual contact.¹⁶⁶

Salmonellosis

According to the CDC, approximately 10 percent (1.4-million cases) of all foodborne illnesses in the United States are caused by *Salmonella* bacteria.¹⁶⁷ *Salmonella* infections are the leading cause of death by foodborne illness (30.6 percent of deaths).¹⁶⁸ Symptoms of *Salmonella* infection begin 6 to 72 hours following ingestion and include diarrhea, abdominal cramping, fever, nausea, vomiting, and headache.

Salmonella bacteria are commonly associated with foods of animal origin (50 percent poultry products, 13 percent beef and pork, and 4 percent unpasteurized dairy products) or fruits and vegetables that are contaminated with animal feces; the bacteria can also be transmitted by infected food handlers. Illness results from consumption of foods that are either raw or improperly cooked. Salmonellosis may also be transmitted through improper handling of pets, particularly reptiles, and improper cleaning of pets' living areas.¹⁶⁹

Nationally, legislation concerning the Hazard Analysis and Critical Control Points was implemented to reduce microbial contamination of meat, poultry, seafood, and unpasteurized fruit and vegetable juices. Other control measures — including proper food handling, cooking, and refrigeration as well as thorough hand washing — will reduce the incidence of infection if properly implemented.¹⁷⁰

- In 1999, 2,198 cases of salmonellosis were reported in Texas (11 per 100,000 population). Two persons died of salmonellosis in 1999. A 10-year trend analysis of Texas data reveals the average reported incidence of salmonellosis to be 13 per 100,000 population.¹⁷¹
- Children under age 5 are especially vulnerable to salmonellosis due to their underdeveloped immune systems. The highest salmonellosis rates (145 per 100,000 population in 1999) have traditionally occurred among children less than 1 year old.¹⁷²



Shigellosis

Shigellosis continues to be one of the most frequently reported enteric diseases in Texas. Although *Shigella* is transmitted by the fecal-oral route and is an enteric pathogen like *Salmonella*, the CDC reports fewer than 1 percent of all foodborne illnesses in the U.S. are caused by *Shigella* bacteria.¹⁷³ *Shigella* is highly infectious; illness can occur from ingestion of as few as 10 bacterial cells. Symptoms appear 12 to 50 hours after infection and include mucoid or pus-laden diarrhea, abdominal cramps, fever, nausea, and vomiting.

Prevention of shigellosis involves standard sanitary practices such as thorough hand washing after bathroom use or diapering and before food preparation. Since shigellosis spreads easily in group child-care settings, strict hand-washing practices as well as the disinfection of toys and diapering surfaces can considerably reduce the spread of the disease.

- In 1999, 2,281 cases of shigellosis were reported in Texas (11.4 per 100,000 population), the lowest rate observed since 1989. A 10 year trend analysis of Texas data reveals the average reported incidence of shigellosis is 17 per 100,000 population.
- The highest incidence in 1999 occurred in the Hispanic population (16.9 cases per 100,000 population). The incidence in 1999 for African Americans was 5.5; for whites, it was 4.5.
- The 1999 incidence for children under 5 years of age was 53 per 100,000 population.¹⁷⁴

Emerging Issue: Bioterrorism

Bioterrorism is the overt or covert dispensing of disease pathogens by individuals, groups, or governments for the expressed purpose of causing harm for either ideological, political, or financial gain. Following the incidents involving anthrax in fall 2001 in the United States, bioterrorism has emerged as a plausible health threat. This section will discuss inhalation anthrax and smallpox, two diseases that could be spread through bioterrorism.¹⁷⁵

Inhalation Anthrax

Historically, human anthrax has been a disease of those in close contact with infected animals or animal products contaminated with *Bacillus anthracis* spores. In the early 1900s, human cases of inhalation anthrax occurred in the U.S. in conjunction with the textile and tanning industries. In the last part of the 20th century, with improved industrial hygiene practices and restrictions on imported animal products, the number of cases fell dramatically; however, death rates remained high at greater than 85 percent.¹⁷⁶

In October 2001, the U.S. began to detect cases of inhalation anthrax from intentional release of the spores — primarily, it is believed, through the mail.

Anthrax is not spread from person to person; rather it is contracted by inhaling anthrax spores. Following inhalation, anywhere from a few days to even several weeks can pass before inhalation anthrax develops and symptoms become present. Patients with inhalation anthrax will initially have nonspecific symptoms that resemble the flu. Three to five days later fever, fatigue, muscle aches and pains, mild chest pain, and a nonproductive cough appear. The patient may show signs of improvement after 2–4 days. These symptoms are then followed by a sudden onset of severe respiratory distress with difficulty breathing, profuse sweating, and a bluish color to the skin when the patient does not get enough oxygen. Without treatment, shock and death follow within 24–36 hours of onset of severe symptoms.¹⁷⁷



Inhalation anthrax must be recognized and treated early or it is more likely to be fatal. Ciproflaxin, doxycycline, and penicillin can be used to treat anthrax. Supportive therapy to maintain normal blood pressure and oxygen levels may be necessary.¹⁷⁸

No anthrax vaccine is available for the general public. Anthrax is not contagious and can be treated with antibiotics. As soon as an anthrax outbreak is detected, these antibiotics would need to be distributed to those exposed in time to prevent disease.¹⁷⁹

General data

Texas

- No cases of anthrax in Texas have resulted from bioterrorism.
- In 2001, a case of cutaneous anthrax occurred in west Texas from the handling of a contaminated animal. The patient recovered. In 2001, anthrax was identified in buffalo, cattle, white-tail deer, goats, horses, water buffalo, and other exotic hoof stock. Animal cases have been documented in the following counties: Bandera, Edwards, Kinney, Real, Uvalde, and Val Verde. Animal anthrax occurs regularly in dry areas of West Texas.¹⁸⁰
- There were no human cases of anthrax in Texas in 2000.¹⁸¹

United States

- Before October 2001, the last case of inhalation anthrax in the U.S. occurred in 1976 and only 18 cases of inhalation anthrax were reported in the U.S. in the 20th century.¹⁸²
- Between October 2001 and December 5, 2001, a total of 22 cases of anthrax had been identified in the U.S.: 11 were confirmed as inhalation anthrax.¹⁸³ The cases occurred in Connecticut, the District of Columbia, Florida, New Jersey, and New York and were the result of intentional release of anthrax. Six of the 11 infected with inhalation anthrax survived. The 11 patients ranged in age from 43 to 94. Eight were male.¹⁸⁴

Smallpox

Although smallpox was eradicated worldwide by 1980, several factors fuel concerns about smallpox as a bioterrorist weapon:

- up to 30 percent of infected persons die;
- the scabs formed when the disease is active permanently physically disfigure victims;
- there is no treatment;
- it is communicable from person to person; and
- the general U.S. population has not been vaccinated in more than 25 years.



In addition, it is known that Russia, at least, has the smallpox virus and the capacity to produce large quantities.¹⁸⁵

Smallpox is caused by the variola virus. The incubation period is about 12 days (range: 7–17 days) following exposure. Initial symptoms include high fever, fatigue, and headaches and backaches. A characteristic rash, most prominent on the face, arms, and legs, follows in 2–3 days. The rash starts with flat red lesions that evolve at the same rate. Lesions become pus-filled and begin to crust early in the second week. Scabs develop, then separate and fall off after about 3–4 weeks. Death occurs in up to 30 percent of cases.¹⁸⁶

Smallpox is a highly contagious virus that can be spread between people who have face-to-face contact.¹⁸⁷ Contaminated clothing or bed linen may also spread the virus.¹⁸⁸

In the U.S., routine vaccination against smallpox ended in 1972 because the disease had been eradicated. The level of immunity, if any, among persons vaccinated before 1972 is uncertain; therefore, those persons are assumed to be susceptible. The U.S. currently has an emergency supply of smallpox vaccine; however, the vaccine is not available to the general public. In people exposed to smallpox, the vaccine can lessen the severity of, or even prevent, illness if given within 4 days after exposure.¹⁹⁰

There is no proven treatment for smallpox, but research to evaluate new antiviral agents is ongoing. Patients with smallpox can benefit from supportive therapy (intravenous fluids, medicine to control fever or pain, etc.) and antibiotics for any secondary bacterial infections that occur.¹⁹¹

The last U.S. cases of smallpox occurred in Texas' lower Rio Grande Valley in 1949.¹⁹²



The number of Texas newborns over the past half-century has increased considerably. These little Texans present a challenge to the state to ensure the best possible birth outcomes and developmental viability through childhood. Some of the issues that affect the health of newborns are discussed in this chapter, including infant mortality rates, neural tube defects, lack of prenatal care (especially early in pregnancy), low birth weight babies, tobacco and alcohol use by pregnant women, and births to teenagers.

It is important to note that while there is no overall indicator for maternal health, the general health of the mother is a significant factor in birth outcomes and infant health. Factors such as low income and insurance status are also important in birth outcomes.¹

Infant Mortality

The infant mortality rate (IMR) is the number of deaths to infants less than one year of age per 1,000 live births. The IMR has historically been used as an important indicator of the overall health of the community and serves as a composite indicator of the quality of, and access to, medical care for pregnant women and infants.

Risk factors for increased infant mortality include congenital abnormalities, infections, barriers to maternal health care, prematurity or low birth weight, lack of prenatal care in the first trimester, maternal age less than 20 or greater than 40, and tobacco use during pregnancy.² The leading cause of infant mortality is birth defects.³

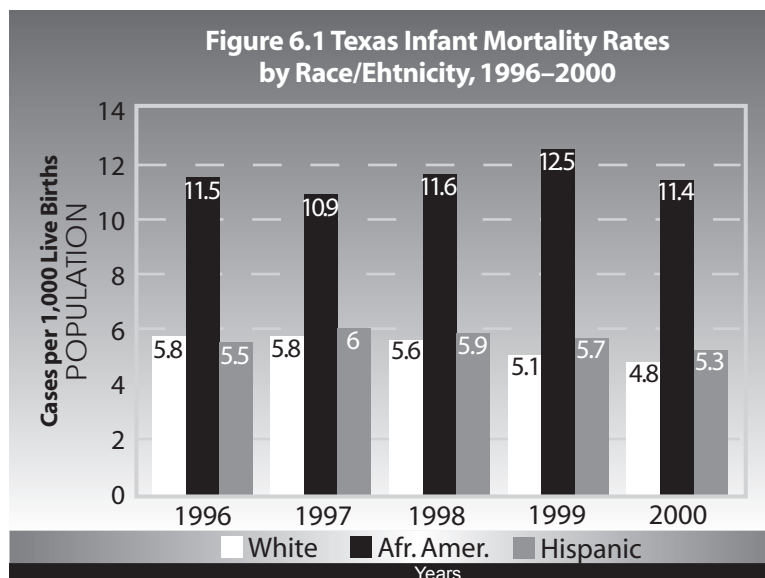
General data

- The overall infant mortality rate in Texas in 2000 was 5.7 per 1,000 live births.⁴
- The Texas infant mortality rate declined 20.0 percent between 1990 and 1999 — from 8.0 deaths per 1,000 live births to 6.2.⁵
- ▼ The national infant mortality rate declined 45.2 percent between 1980 and 2000 — from 12.6 deaths per 1,000 live births to 6.9.⁶

Race/ethnicity data

- In Texas from 1989 through 1999, African American infants, on average, died at a rate twice that of all other infants born in the state.⁷ The African American infant mortality rate in 2000 (11.4 per 1,000 live births) followed historical trends and continued to be considerably greater than the rates for Hispanics (5.3) and whites (4.8).⁸ Figure 6.1 shows Texas infant mortality rates for the period 1996–2000 by race/ethnicity.





Source: Texas Department of Health, Health Disparities in Texas: An Epidemiologic Review of Priority Health Outcomes, March 2002.

- ▼ Nationally, the IMR for African Americans, Hispanics, and whites paralleled state figures. From 1990 through 2000, the African American IMR went from 16.9 per 1,000 live births to 14.0. In the same period, the IMR for whites went from 7.2 per 1,000 live births to 5.7; the IMR for Hispanics went from 7.5 per 1,000 live births to 5.6.⁹

Neural Tube Defects*

Neural tube defects (NTDs) are a group of birth defects caused by the failure of the neural tube to develop properly by the 28th day after conception. The two major types of NTDs are **anencephaly** and **spina bifida**. NTDs are associated with inadequate consumption of folic acid by mothers prior to conception. Genetics, maternal metabolic defects, diabetes, and maternal obesity may also contribute to NTDs.¹⁰

General data

- In Texas, during the period 1995–1997, the birth prevalence of anencephaly and spina bifida were 3.78 per 10,000 and 5.29 per 10,000 respectively.¹¹
- Provisional data from the Texas Birth Defects Registry indicate that the rate of spina bifida has been decreasing steadily to just under 4 cases per 10,000 live births in 1999.¹²
- ▼ Beginning January 1998, the U.S. Food and Drug Administration (FDA) required folic acid fortification of U.S. grain products sold in the U.S. Recent national data (including Texas) comparing NTD prevalence before and after mandatory fortification indicate a 31 percent decline in the birth prevalence of spina bifida and a 16 percent decline in anencephaly. For the period from October 1998 through December 1999, national rates from combined birth defects registry data were 3.54 per 10,000 live births for spina bifida and 2.05 for anencephaly.¹³

*Data on other birth defects are available from the Texas Birth Defects Registry, <www.tdh.state.tx.us/tbdrm/index.htm>.



Race/ethnicity data

- In Texas during 1995–97, anencephaly and spina bifida rates were lowest in African Americans and highest in Hispanics. The prevalence of anencephaly among African Americans was 2.56 per 10,000 live births, and 2.1 for spina bifida. The prevalence for anencephaly among whites was 3.16, and 4.17 for spina bifida. Prevalence for anencephaly among Hispanics was 4.17, and 6.48 for spina bifida.¹⁴
 - ▼ In the U.S., NTD prevalence has been reported to be highest among Hispanics, followed in descending order by whites and African Americans. It appears there are also disparities by geographic location, even when taking the racial/ethnic makeup of those areas into account.¹⁵
- The 14 counties bordering Mexico have consistently experienced exceptionally high rates of NTDS, with anencephaly rates spiking at times in individual counties to as high as 26 per 10,000 live births.¹⁶

Notes

Research indicates that as many as 70 percent of NTDs could be prevented when mothers consume folic acid prior to conception. The U.S. Public Health Service recommends that women of childbearing age consume 0.4 mg of folic acid daily to reduce the risk of spina bifida and anencephaly.¹⁷ However, surveys from the Texas Birth Defects Research Center show that fewer than one-quarter of Texas women are aware of the protective effects of folic acid and that only one-third take folic acid daily.¹⁸

Prenatal Care

Early and continued access to prenatal care is important to ensure the health of mothers and infants. Adequate prenatal care has been shown to reduce the prevalence of low birth weight babies and decrease the risk of preterm delivery. Consequences associated with a lack of prenatal care include low birth weight babies, premature deliveries, infant mortality, and maternal mortality.¹⁹

Women with unwanted or unplanned pregnancies, women without a regular health care provider prior to pregnancy, and women without a high school diploma are least likely to receive prenatal care during the first trimester. Barriers to early or adequate prenatal care include language or cultural differences, fear of the medical system, a lack of awareness of the pregnancy, lack of money or insurance, an absence of services within the community, or problems related to transportation.²⁰

General data

In Texas in 2000, 21.2 percent of pregnant women lacked prenatal care in the first trimester.²¹



Race/ethnicity data

In both Texas and the U.S., whites are more likely than African Americans and Hispanics to receive prenatal care in the first trimester. Table 6.1 illustrates racial/ethnic disparities in prenatal care.

Table 6.1 Percentage of Pregnant Women Lacking Prenatal Care in the First Trimester, Texas and U.S., 2000

| Race/Ethnicity | Texas 2000 % Lacking Prenatal Care ²² | U.S. 2000 % Lacking Prenatal Care ²³ |
|------------------|---|--|
| All | 21.2 | 16.8 |
| White | 12.5 | 11.5 |
| African American | 23.7 | 25.7 |
| Hispanic | 28.8 | 25.6 |

Source: Texas Department of Health.

- In 1994, 24.5 percent of pregnant Texans lacked prenatal care in the first trimester. For whites, 15.3 percent lacked prenatal care in the first trimester, as did 29.6 percent of African Americans and 33.4 percent of Hispanics.²⁴
- ▼ In 1990, nationally, the percentage of pregnant women without prenatal care in their first trimester was 16.7 for whites, 39.3 for African Americans, and 39.8 for Hispanics.²⁵

Age data

- In Texas in 2000, rates of prenatal care in the first trimester increased as maternal age increased. See Table 6.2 for details.²⁶

Table 6.2 Percentage of Pregnant Women Lacking Prenatal Care in the First Trimester by Age Group, Texas 2000

| Age Group | % Lacking Prenatal Care |
|----------------|-------------------------|
| 17 and younger | 38.5 |
| 18–19 | 33.1 |
| 20–24 | 26.3 |
| 25–29 | 16.8 |
| 30 and older | 13.2 |

Source: Texas Department of Health, Bureau of Vital Statistics.



- ▼ Across the nation, rates of prenatal care in the first trimester increased as maternal age increased: 37.9 percent of mothers ages 15–17 lacked prenatal care in the first trimester, and 33.1 percent of mothers ages 18–19. Fewer than 17 percent of mothers aged 25 and older lacked prenatal care in their first trimester.²⁷

Low Birth Weight Babies

Low birth weight (LBW) is defined as a weight of less than 2,500 grams at birth. LBW places infants at an increased risk for adverse health outcomes, including death.

The principal causes of LBW are intrauterine growth retardation or delivery before completion of 37 weeks of gestation. These factors may in turn result from infection, overexertion, poor nutrition, or the use of alcohol, tobacco, or illicit drugs during pregnancy. An increase in the number of multiple births through the 1990s has contributed to the increasing number of low birth weight babies.²⁸ Much of the LBW risk for the oldest mothers is attributable to their higher rates of multiple births. When singleton births are examined, women 45 years and older were substantially less likely than their youngest counterparts to bear a LBW child.²⁹

General data

- In 2000, 7.4 percent of newborns had a low birth weight in Texas.³⁰
- In Texas, a modest increase in the rate of LBW was evident during the 1990s (1990, 7.0 percent; 2000, 7.4 percent).³¹
- ▼ Across the U.S. during 1984–2000, the percent of LBW births increased from the low of 6.7 percent reported in 1984 to 7.6 percent in 2000.³²

Race/ethnicity data

- In Texas, the percentage of LBW African American infants (12.7) was almost twice that of LBW white infants (6.6) or Hispanic infants (6.8) in 2000.³³
- ▼ The percentage of LBW babies born in the U.S. in 2000 was highest among African Americans (12.9) and lower among Hispanics (6.4) and whites (6.6).³⁴



Age data

- Mothers 40 and older and young teen mothers are most likely to have low birth weight babies. See Table 6.3 for a breakdown of the percentages of LBW babies by age group in Texas in 2000.³⁵

Table 6.3 Percentage of Babies Who Were LBW by Age of Mother, Texas, 2000

| Age Group | % of Babies Who Were LBW Born to Mothers in Age Group |
|-----------|---|
| 10–14 | 13.9 |
| 15–19 | 8.8 |
| 20–24 | 7.1 |
| 25–29 | 6.5 |
| 30–34 | 6.9 |
| 25–29 | 8.5 |
| 30–34 | 10.6 |

Source: Texas Department of Health, Bureau of Vital Statistics.

Tobacco and Alcohol Use During Pregnancy

Using tobacco or alcohol during pregnancy has been shown to cause adverse health outcomes in infants. When women smoke during pregnancy, they increase their risk for preterm delivery and having a low birth weight baby, both of which are associated with increased infant mortality.³⁶ Alcohol can cause low birth weight and other adverse health outcomes. One of the most detrimental is Fetal Alcohol Syndrome (FAS). FAS is characterized by growth retardation, abnormal facial features, and problems with the central nervous system. Children with FAS can have serious lifelong disabilities, including mental retardation, learning disabilities, and serious behavioral problems.³⁷

Based on birth certificates, nationally, only 0.9 percent of women reported alcohol use during pregnancy (2000), but surveys such as the Behavioral Risk Factor Survey and the Pregnancy Risk Assessment Monitoring System (selected states only) found substantially higher alcohol use rates. In part because the birth certificate question on alcohol use is self-reported, it may not be sensitive enough to measure this behavior.³⁸



General data

- Between 1990 and 2000, the percentage of mothers in Texas who reported alcohol consumption and tobacco use during pregnancy decreased.³⁹ See Table 6.4 for details.

Table 6.4 Percent of Women Reporting Alcohol Consumption and Tobacco Use During Pregnancy, Texas, 1990 and 2000

| 1990 alcohol consumption | 2000 alcohol consumption | 1990 tobacco use | 2000 tobacco use |
|--------------------------|--------------------------|------------------|------------------|
| 1.7 | 0.9 | 9.3 | 6.4 |

Source: Texas Department of Health, Bureau of Vital Statistics.

- ▼ Across the nation, smoking during pregnancy has declined steadily since 1989, the first year this information was reported on the birth certificate. In 2000, 12.2 percent of women reported smoking during pregnancy, a third lower than in 1989 (19.5 percent).⁴⁰
- ▼ In the U.S. in 2000, 0.9 percent of women reported alcohol use during pregnancy on birth certificates.⁴¹

Low birth weight and alcohol consumption or tobacco use during pregnancy

- Of Texas mothers who reported using tobacco during their pregnancy, 11.5 percent delivered low birth weight infants, compared to 7.0 percent of births to non-smokers.⁴²
 - ▼ In the U.S. in 1998, 12 percent of babies born to smokers were LBW, compared to 7.2 percent of babies born to nonsmokers.⁴³
- In 2000, 11.8 percent of births to Texas mothers who reported using alcohol during their pregnancy were low birth weight, compared to 7.3 percent for women who used no alcohol.⁴⁴

Teen Mothers

It is estimated that one-third of pregnant teenagers receive inadequate prenatal care, and infants born to young mothers are more likely to be low birth weight, to have childhood health problems, and to be hospitalized than are those infants born to older mothers.⁴⁵

The children of teenage mothers are at greater risk of poverty, behavioral and social problems, poor nutrition, inadequate health care, abuse or neglect, premature birth, and low birth weight than children of older mothers.⁴⁶



General data

- Birth rates for Texas teens exceed the national teen birth rates. See Table 6.5 for details.

**Table 6.5 Teen Birth Rates
Per 1,000 in the Age Group, Texas and U.S., 1999**

| Age Group | Texas birth rate ⁴⁷ | U.S. birth rate |
|-----------|--------------------------------|--------------------|
| 10–14 | 1.5 | 0.9 ⁴⁸ |
| 15–19 | 72.0 | 48.7 ⁴⁹ |

Source: Texas Department of Health.

- Texas birth rates for 15 to 19-year-olds in each of the three major racial/ethnic groups exceed the national rates for these groups. See Table 6.6 for details.

**Table 6.6 Birth Rates for 15- to 19-Year-Olds,
Per 1,000 in the Age Group, Texas and U.S., 2000**

| Race/Ethnicity | Texas birth rate ⁵⁰ | U.S. birth rate ⁵¹ |
|-------------------|--------------------------------|-------------------------------|
| Whites | 40.4 | 32.8 |
| African Americans | 83.9 | 79.2 |
| Hispanics | 111.8 | 94.4 |

Source: Texas Department of Health.

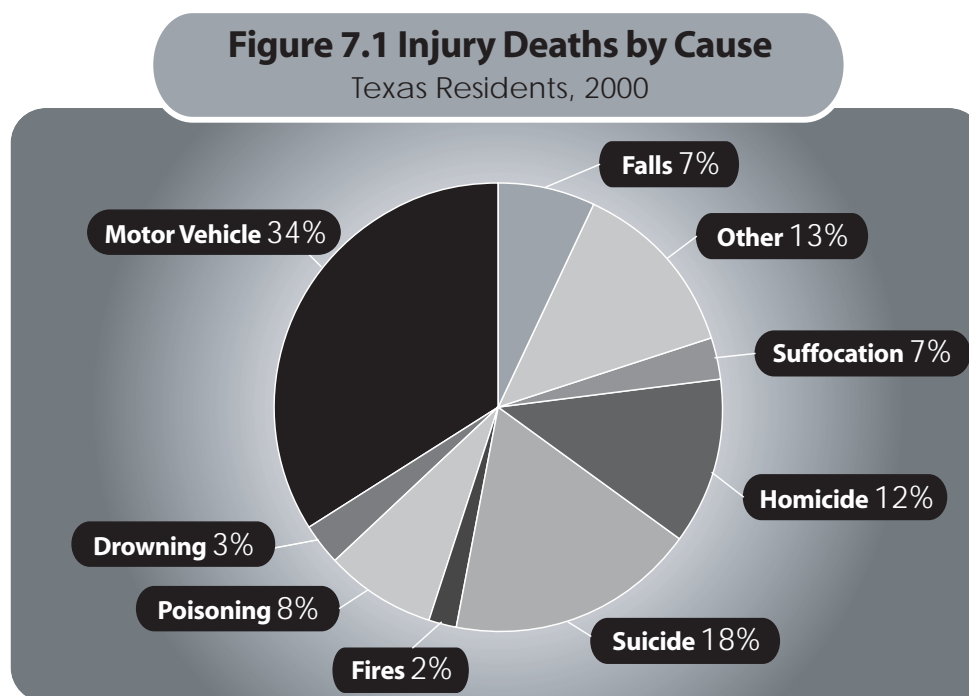
- In the period 1994–2000, birth rates for Texas females 10–14 years of age fell from 2.0 to 1.5 per 1,000 women in this age group.⁵²
 - ▼ In the nation during the period 1994–2000, birth rates for 10 – to 14-year-olds fell from 1.4 to 0.9 per 1,000 females in this age group.⁵³
- In the period 1994–2000, birth rates for Texas females 15–19 years of age fell from 79.7 to 72.0 per 1,000 females in this age group.⁵⁴
 - ▼ In the nation during the longer period of 1990–2000, the birth rate for females aged 15–19 years of age fell from 59.9 to 48.7 per 1,000 females in this age group.⁵⁵

Note

The teen birth rate for the U.S. is the highest of all developed countries, with about one million teenage pregnancies occurring each year.⁵⁶



“Injury” refers to both unintentional and intentional damage to the body by the individual or by another. Figure 7.1 below illustrates the various causes of injury deaths in Texas in 2000. Motor vehicle crashes, suicide, and homicide are the three most common causes of injury deaths in Texas. “Other” in the pie chart refers to injuries resulting from accidental discharge of a firearm, land transportation other than motor vehicles, water, space, and air transportation, and non-transportation incidents not specified on the death certificate.



Source: Texas Department of Health, Bureau of Vital Statistics.

Prepared by Texas Department of Health, Health Communications Division, based on data from the Injury Epidemiology Surveillance Program.

This chapter will focus primarily on unintentional injury (accidental) deaths overall, then motor vehicle crashes and homicide. Suicide, an intentional injury, will be discussed in this report’s chapter on mental health.

Unintentional Injury (Accidental) Deaths

- The unintentional injury mortality rate has increased in Texas since 1994 when the rate was 31.5 per 100,000.¹ Table 7.1 shows the Texas unintentional injury death rate from 1994 through 2000.

Table 7.1 Texas Unintentional Injury Death Rate Trends
Per 100,000 Population

| | 1994 | 1995 | 1996 | 1997 | 1998 | 1999 | 2000 |
|--|------|------|------|------|------|------|------|
| Unintentional-Injury Death Rate | 31.5 | 31.2 | 34.4 | 33.6 | 34.2 | 35.9 | 37.4 |

Source: Texas Department of Health, Bureau of Vital Statistics.

- Unintentional injuries were the fourth leading cause of death among all Texans in 2000.²
 - ▼ For the U.S., in the period 1996–98, unintentional injuries were the fifth leading cause of death overall.³
- In Texas, males have higher unintentional injury death rates than females, and African American males experience the highest unintentional injury death rates.⁴
- In 2000 in Texas, unintentional injuries were the third leading cause of death for Hispanics, the fourth leading cause of death for African Americans, and the fifth leading cause of death for whites.⁵
- In 2000, unintentional injuries were the leading cause of death for Texans ages 1–34.⁶
 - ▼ For the period 1996–98, unintentional injuries were the leading cause of death in the U.S. for people aged 1–34.⁷

Motor Vehicle Crashes

- Texas leads the nation in traffic fatalities. In 2000, 3,679 people were killed, and more than 300,000 injured on Texas streets and highways. Many of these deaths and injuries could have been prevented if the victims had been using safety belts.⁸
- Motor vehicle crashes were the leading cause of death from injury in Texas, accounting for 28 percent of these injury deaths in 1999.⁹
 - ▼ Nationally, the leading cause of fatal unintentional injuries in 1998 was motor vehicle crashes.¹⁰
- The motor vehicle death rate (per 100,000 population) decreased 36 percent between 1980 and 1997 in Texas (from 30.2 to 19.3) despite a 62 percent increase in vehicular traffic.¹¹
 - ▼ In 1996, the national motor vehicle death rate was 16.5 deaths per 100,000.¹²



- From 1985 to 1998 in Texas, use of safety belts by front-seat occupants increased from 14.2 percent to 76.3 percent. However, in 1998, only 59 percent of the drivers injured in motor vehicle crashes (other than motorcycle-related) were restrained and only 43 percent of the injured passengers were restrained. For those injured in motorcycle crashes, only 51 percent were wearing a helmet.¹³

Notes

Wage losses, medical expenses, property damage, employer costs, fire losses and other expenses related to unintentional injuries and fatalities cost Americans an estimated \$512.4 billion in 2000.¹⁴

Measures taken to prevent unintentional injuries could prevent suffering and save lives and money. Table 7.2 summarizes some of the estimates of savings from injury-prevention measures. As Table 7.2 shows, effective interventions to prevent injuries exist but are frequently not used.

Table 7.2 Estimated Savings from Injury-Prevention Measures

| Prevention Measure | Savings |
|--------------------|--|
| Child safety seats | <ul style="list-style-type: none"> • reduce the risk of death for infants by 71% and 54% for toddlers¹⁵ • every child safety seat saves \$85 in direct medical costs and an additional \$1,275 in other costs (1997 dollars)¹⁶ |
| Bicycle helmets | <ul style="list-style-type: none"> • reduce the risk of head injury by 85% and brain injury by 88%¹⁷ • every bicycle helmet saves \$395 in direct medical costs and other costs (1997 dollars)¹⁸ |
| Safety belts | <ul style="list-style-type: none"> • reduce the risk of death or serious injury to adult front seat passengers by 45-50%¹⁹ • a 9% increase in safety belt use in Texas would produce an economic savings of \$392 million²⁰ |
| Smoke detectors | <ul style="list-style-type: none"> • chances of dying in a residential fire are cut in half when a working smoke detector is present²¹ • on average, every smoke detector saves \$35 in direct medical costs and an additional \$865 in other costs (1997 dollars)²² |
| Motorcycle helmets | <ul style="list-style-type: none"> • 67% effective in preventing brain injuries. Brain injury is the leading cause of death in motorcycle crashes.²³ |

Source: Texas Department of Health, Bureau of Vital Statistics.



Homicide

Homicide is one important issue in talking about injuries, but it is also an important indicator of overall level of violence in a society. Violence has become an important public health concern over the past few decades as public health officials have begun to recognize the important impact of violence on the physical and mental health of victims and victims' families.

One way of assessing violence is to look at crime statistics. The crime index is composed of selected offenses used to gauge fluctuations in the overall volume and rate of crime reported to law enforcement agencies. The offenses included in calculating the crime index are the violent crimes of murder and nonnegligent manslaughter, forcible rape, robbery, and aggravated assault, and the property crimes of burglary, larceny-theft, and motor vehicle theft. While the index includes nonviolent crimes, it is important to remember the emotional and mental impact of victimization when looking at crime from the public health perspective. In 2000 in Texas, the crime index was 4,952 per 100,000 population. In the U.S., the 2000 crime index was 4,124 per 100,000 population. These rates show that more Texans and Americans are affected by crime than any particular disease.²⁴

Homicides are often the result of conflict between persons who are familiar with each other and have access to a firearm. Poverty and drug use can be contributing factors.²⁵

Table 7.3 shows homicide statistics for Texas and the U.S. These summary statements are based on the statistics in the table:

- Homicide rates declined in both Texas and the U.S. in the 1990s.
- Homicide deaths are more common among African Americans and Hispanics than among whites in both Texas and the U.S.
- Males tend to be the murder victims and perpetrators much more often than females in both Texas and the U.S.
- Handguns are used to commit the majority of murders in Texas and the U.S.



**Table 7.3 Homicide Statistics
Texas and U.S.**

| Texas | United States |
|--|--|
| (1) 5.9 people murdered per 100,000 in 2000. ²⁶ | (1) 5.5 people murdered per 100,000 in 2000. ²⁷ |
| (2) Homicide rates declined from 15.8 per 100,000 in 1991 to 5.9 in 2000 (37%). ²⁸ | (2) Homicide rates declined 28.4% between 1990 and 1998. ²⁹ |
| (3) In 2000, African Americans had a homicide death rate of 15.7 per 100,000. Hispanics had a homicide death rate of 8.5 per 100,000. Whites had a homicide death rate of 3.5 per 100,000. ³⁰ | (3) In 1999, homicide accounted for 2.8 percent of Hispanic deaths, 2.7 percent of African American deaths, and 0.3 percent of white deaths. ³¹ |
| (4) In 2000, 75.0 % of victims were male; 91.0% of offenders were male. ³² | (4) In 2000, 76.0% of victims were male; 90.2% of offenders were male. ³³ |
| (5) 66.2% of offenders were between 17 and 34 years of age in 2000. ³⁴ | (5) 69.1% of offenders were between 17 and 34 years of age in 2000. ³⁵ |
| (6) 63.0% of murder weapons were firearms, of which 72.0% were handguns, in 2000. ³⁶ | (6) 65.6% of murder weapons were firearms, of which 51.7% were handguns, in 2000. ³⁷ |

Source: Texas Department of Health.

Note on Traumatic Brain Injuries

It is important to note that although this chapter has generally reviewed injury deaths, there are also important public health concerns related to persons who survive injury with long-term disabling conditions. According to the Centers for Disease Control, 144,000 Texans sustain a traumatic brain injury (TBI) each year. More than 381,000 Texans are living with TBI disability and more than 5,700 are permanently disabled by TBI each year. The prevalence of disability from TBI is greater than from AIDS, Alzheimer's, stroke, muscular dystrophy, cerebral palsy, or spinal cord injury.³⁸



Mental health is a state of successful performance of mental function.¹ Mental health is necessary for an individual's overall health and productivity and is crucial for successful family and interpersonal relationships and contributions to society. *Mental illness* is used to collectively describe all diagnosable mental disorders, defined as health conditions characterized by changes in thinking, mood, or behavior. Without proper treatment, mental illnesses can lead to disability, pain, and even death. One in five Americans experiences mental illnesses and disorders.²

The number of sufferers from mental illness in Texas is substantial, even if only severe illness is considered. The Texas Department of Mental Health and Mental Retardation defines two priority populations for mental health services:³

- There are 150,481 children and adolescents under the age of 18 with a diagnosis of mental illness who exhibit severe emotional or social disabilities that are life-threatening or require prolonged intervention.
- There are 374,645 adults who have severe and persistent mental illness such as schizophrenia, major depression, bipolar disorder, or other severely disabling mental disorders that require crisis resolution or ongoing and long-term support and treatment.

Mental illness that is not successfully treated can manifest itself in anti-social behavior. In February 2000, the Texas Criminal Justice Policy Council reported:⁴

In 1998 it is estimated that approximately 25,227 adults under criminal justice supervision in Texas received mental health services. Between 1988 and 1998, while the T[exas] D[epartment of] C[riminal] J[ustice] incarcerated population increased by 262 percent, the number of mentally ill offenders in prison receiving outpatient mental health services increased by 492 percent from 2,589 in 1988 to 13,691 in 1998. In 1998, the prison system had 2,116 beds allocated for inpatient psychiatric treatment compared to 826 beds in 1988. In addition, county jails provided psychiatric medications to an estimated 5,893 inmates in 1998.

According to the National Mental Health Association, the prevalence of mental disorders among youth in juvenile justice facilities ranges from 50 to 75 percent.⁵

The costs of mental illness are high in the U.S. The direct costs of diagnosing and treating mental disorders totaled approximately \$69 billion in 1996. Lost productivity and disability-insurance payments due to mental illness or premature death accounted for an additional \$74.9 billion. Crime, criminal justice costs, and property loss contributed another \$6 billion to the total cost of mental illness.⁶

The direct costs of mental illness in Texas in both the private and public sector are estimated to be nearly \$4.8 billion per year. Such indirect costs of mental illness as lost employment, reduced productivity, criminal activity, vehicular accidents, and social welfare programs increase the cost of mental disorders to nearly \$11.3 billion annually.⁷



Given the great impact of mental illness on Texas and the nation, identifying risk factors is an important aspect of promoting mental health. However, risk factors for mental illnesses vary and are not well understood. In 1999, a report by the U.S. Surgeon General observed:

Many mental health problems, especially in childhood, share some of the same risk factors for initial onset such as neurophysiological deficits, difficult temperament, chronic physical illness, and below-average intelligence; family factors such as severe marital discord, social disadvantage, overcrowding or large family size, paternal criminality, maternal mental disorder, and admission into foster care; and community factors such as living in an area with a high rate of disorganization and inadequate schools. Also, some individual risk factors can lead to a state of vulnerability in which other risk factors have more effect. For example, low birth weight is a general risk factor for multiple physical and mental outcomes; however, when it is combined with a high risk social environment, it more consistently has poorer outcomes. The accumulation of risk factors usually increases the likelihood of onset of disorder.⁸

Besides the difficulty of isolating and evaluating risk factors for mental illness, addressing mental illnesses is complicated by a number of other factors. Getting good data on the number of sufferers is difficult because diagnostic categories and criteria tend to vary more than for illnesses such as heart disease. In addition, underreporting because of respondent reluctance to admit symptoms continues to be a challenge to information gathering.⁹

Limited population-wide research has been conducted to identify racial/ethnic differences in suffering from particular mental illnesses. In 1999, the U.S. Surgeon General published a report entitled *Mental Health: Culture, Race, and Ethnicity*.¹⁰ The report cites studies that tend to indicate that the rates of mental illness among African Americans are similar to those among whites. However, as the Surgeon General notes, even this judgment is open to question because of the overrepresentation of African Americans in high-need areas (e.g., psychiatric hospitals, prisons, and poor rural areas) that are not readily accessible to researchers who conduct household surveys. In comparing studies regarding Hispanics and whites, the Surgeon General's report concludes that, generally speaking, the rate of mental disorders among Hispanics living in the community is similar to that among whites. However, some research shows that adult Mexican immigrants have a lower rate of mental disorders than Mexican-Americans born in the U.S.¹¹

This chapter provides available information on several major issues in mental illness: depressive disorders, suicide, and schizophrenia.

Depressive Disorders

Depressive disorders encompass major depressive disorder, dysthymic disorder, and bipolar disorder. Bipolar disorder is included because people with this illness have depressive, as well as manic, episodes.¹²

Although depression (major depressive disorder and dysthymic disorder) and bipolar disorder are often considered together as depressive disorders, their risk factors may not be entirely the same. The causes of depression and bipolar disorder are not well understood.¹³

Research has shown that those at risk for depression include people who:

- have suffered from depression in the past
- have a family history of depression



- abuse drugs or alcohol
- use certain medications that are known to trigger episodes of depression (such as medicine to treat high blood pressure or seizures)
- experience a stressful life event such as losing a job or a loved one
- experience chronic pain
- have certain medical conditions that are known to trigger episodes of depression
- have a childhood history of physical or sexual abuse.¹⁴

Bipolar disorder can be passed down through families, so some people have a genetic risk. A stressful life event can trigger an episode of bipolar symptoms, especially early in the course of the illness. People who have experienced episodes of depression or mania in the past will likely experience mood episodes in the future. Alcohol or drug abuse puts bipolar sufferers at risk for relapse of mood disturbances. Discontinuing medication can cause a relapse of mood disturbance.¹⁵

General data

- An estimated 412,977 Texans were estimated to suffer from major depressive disorder in 2002; 321,205 from lifetime dysthymia; and 91,773 from bipolar disorder.¹⁶
- ▼ Approximately 18.8 million American adults or about 9.5 percent of the U.S. population age 18 and older in a given year have a depressive disorder.¹⁷

Gender data

- Nearly twice as many women (12.0 percent) as men (6.6 percent) suffer from a depressive disorder each year in the U.S.¹⁸

Age data

- While major depressive disorder can develop at any age, onset is usually young adulthood.¹⁹

Notes²⁰

- Depressive disorders may be appearing earlier in life in people born in recent decades compared to the past.
- Depressive disorders often co-occur with anxiety disorders and substance abuse.



Suicide

Suicide is used as an indicator of the mental health status of a population because suicide occurs most frequently as an end result of a mental disorder.²¹ Depression and substance abuse are two major risk factors for suicide. Other contributors include: prior attempts, not seeking help due to stigma, lack of access to mental health services, stressful life events, and easy access to guns and other means to commit suicide.²²

General data:

- In 2000, suicide was the ninth leading cause of death in Texas.²³
 - ▼ Suicide was not in the top ten causes of death nationwide in 1999.²⁴
- In 2000, 2,093 Texas residents committed suicide at a rate of 10.3 per 100,000 population.²⁵
 - ▼ The national suicide rate in 1999 was 10.7 per 100,000 population.²⁶
- Suicide death rates in Texas have declined during the past 6 years from 12.3 per 100,000 population in 1994 to 10.3 per 100,000 population in 2000.²⁷

Race/ethnicity data

- The suicide rate for whites in Texas in 2000 of 13.6 per 100,000 was more than twice the rates for African Americans and Hispanics, which were 6.0 per 100,000 population and 5.6 per 100,000 population, respectively.²⁸
 - ▼ In 1998, the national racial/ethnic disparities were similar to those in Texas in 2000.²⁹
- Texas men had suicide rates four times higher than women in 2000 (16.6 per 100,000 population compared to 4.1 per 100,000 population, respectively). White males committed 60 percent of all suicides in 2000.³⁰
 - ▼ Nationally, four times as many men as women commit suicide; however, women attempt suicide 2–3 times as often as men.³¹ In 1999, the death rate from suicide was 17.6 per 100,000 population for men and 4.1 for women.³²

Age data

- The highest suicide rates usually occur among the elderly. In 2000, the suicide rate for Texans ages 65–74 was 12.1 per 100,000, and 18.2 per 100,000 population for Texans older than 75 years of age.³³
 - ▼ The highest suicide rates in the U.S. are found in white men over age 85.³⁴ The death rate from suicide for white men aged 65 and older is 34.5 per 100,000 population.³⁵



- ▼ In the nation, suicides among children age 14 years or younger has quadrupled since 1950.³⁶

Notes

- Almost twice as many people in the U.S. committed suicide (30,575 persons) as were murdered (17,893) in 1998.³⁷
- More than 90 percent of people who kill themselves have a diagnosable mental disorder, commonly a depressive disorder or a disorder involving abuse of alcohol or illicit drugs.³⁸

Schizophrenia

Schizophrenia is the most persistent and disabling of the major mental illnesses.³⁹ A diagnosis of schizophrenia encompasses a pattern of symptoms in conjunction with impaired occupational or social functioning. According to the Surgeon General's report:

Schizophrenia is characterized by profound disruption in cognition and emotion, affecting the most fundamental human attributes: language, thought, perception, affect, and sense of self. The array of symptoms, while wide ranging, frequently includes psychotic manifestations, such as hearing internal voices or experiencing other sensations not connected to an obvious source (hallucinations) and assigning unusual significance or meaning to normal events or holding fixed false personal beliefs (delusions).⁴⁰

The cause of schizophrenia is unknown, but current research indicates some interaction between a genetic vulnerability and major environmental upheaval during the development of the brain.⁴¹

General data

- In the U.S., the one-year prevalence of schizophrenia in adults aged 18 to 54 is estimated to be 1.3 percent.⁴²
- In 2002 in Texas, an estimated 137,659 people suffer from schizophrenia.⁴³
- In 2000, 27 Texans died from schizophrenia and related disorders.⁴⁴

Gender data

- Although schizophrenia affects men and women with equal frequency, it usually appears earlier in men than women. Men usually are affected in their late teens and early twenties and women, in their twenties to early thirties.⁴⁵
- Women tend to have more hallucinations and delusions than men but less social withdrawal and lack of motivation or energy.⁴⁶



Notes

- Schizophrenia patients have substance abuse rates of 50 percent or higher and a 10 percent suicide rate. They also have more health problems and a greater likelihood of homelessness and early death compared to the general population.⁴⁷



The mouth reflects general health and well-being. Behavior that generally poses risks of diseases, such as tobacco use and poor diet, often affects oral health. Recently, research findings have pointed to possible associations between chronic oral infections and diabetes, heart and lung diseases, stroke and low birth weight, and premature births.¹

Poor oral health can be an early warning system. For example, mouth lesions and other oral conditions may be the first signs of HIV infection and are used to determine the stage of infection and to follow its progression to AIDS. Studies in post-menopausal women suggest that bone loss in the lower jaw may precede the skeletal bone loss seen in osteoporosis.²

If untreated, oral diseases in children frequently lead to serious general health problems and significant pain, interference with eating, overuse of emergency rooms, and lost school time. It has been estimated that 51 million school hours per year are lost because of dental-related illness alone.³ Adults with oral disease can experience similar problems.

Tooth Decay

Dental caries refers to tooth decay, otherwise known as cavities. A cavity is a late manifestation of a bacterial infection. The bacteria colonizing the mouth form a complex mass that adheres to tooth surfaces commonly called dental plaque. These bacteria ferment sugars and other carbohydrates to form acids. Repeated cycles of acid generation result in microscopic dissolution of minerals in the tooth's enamel or outer covering. If the tooth decay infection in enamel goes unchecked, the acid dissolution can advance to form a cavity that can extend to the pulp tissue under the enamel and cause toothache and sensitivity to temperature and sweets. If untreated, the pulp tissue infection can lead to abscess, destruction of bone, and spread of the infection via the bloodstream. Tooth decay can occur at any age after teeth erupt. Particularly damaging forms of tooth decay can begin early when developing primary teeth are especially vulnerable.⁴

Tooth decay is one of the most preventable diseases. Regular oral hygiene such as flossing and tooth brushing, coupled with a preventive dental program, can prevent tooth decay. A complete preventive dental program includes sealants, fluoride, and regular professional dental care including plaque removal.⁵ Eating a balanced diet low in sugars and starches and limiting between-meal snacks helps prevent tooth decay.⁶

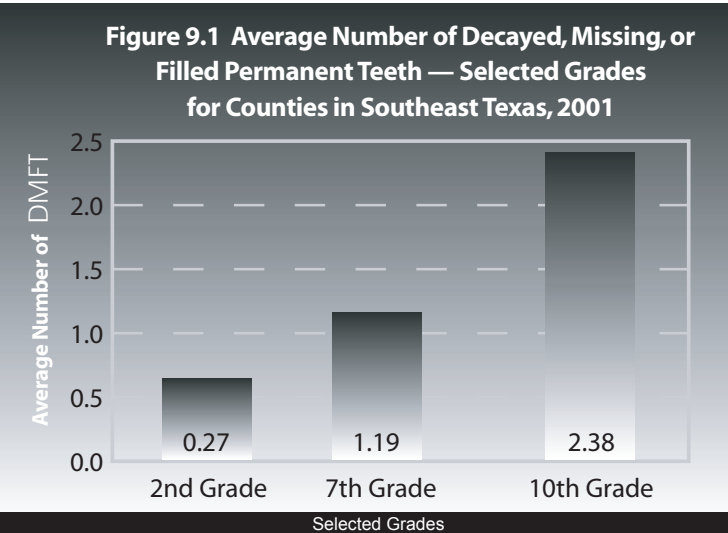
Texas data

Currently, no statewide data are available on the prevalence of tooth decay in Texas for adults or children; however, in 2001 the University of Texas Health Science Center at Houston Dental Branch completed a dental study of children in seven counties around Houston. The counties included in the study were Brazoria, Colorado, Fort Bend, Galveston, Harris, Liberty, and Matagorda. A total of 2,686 children from 33 public schools in the seven-county region were examined. Just over 50 percent of the schools were located in rural areas. In all, 292 pre-kindergarteners, 568 second graders, 957 seventh graders, and



869 tenth graders were examined. Complete analyses for race/ethnicity and gender are not yet available. The study revealed the following:⁷

- On average, children in second grade had 0.27 decayed, missing, or filled permanent teeth (DMFT). Adolescents in seventh grade had an average of 1.19 DMFT and those in tenth grade had an average of 2.38 (Figure 9.1).



Source: Dental Task Force of the Greater Houston Metropolitan Area, in collaboration with the Department of Dental Public Health and Dental Hygiene, Dental Branch, University of Texas Health Science Center at Houston, supported by the Texas Department of Health, Innovations Grant No. 74474474444 2001.

- The prevalence of *untreated* tooth decay in the seven counties studied and for the four grades studied varied greatly (see table 9.1).

| Table 9.1 Prevalence of Untreated Tooth Decay Seven Counties in UTHSC Study, 2001 | | |
|--|--|---|
| Grade | Highest county prevalence of untreated tooth decay (% , county) | Lowest county prevalence of tooth decay (% , county) |
| Pre-K | 54.3 (Matagorda) | 28.3 (Liberty) |
| 02 | 51.2 (Liberty) | 25.7 (Colorado) |
| 07 | 38.2 (Matagorda) | 13.5 (Brazoria) |
| 10 | 37.2 (Brazoria) | 23.4 (Colorado) |

Source: The Dental Task Force of the Greater Houston Metropolitan Area, in collaboration with the Department of Dental Public Health and Dental Hygiene, Dental Branch, University of Texas Health Science Center at Houston, supported by the Texas Department of Health, Innovations Grant No. 74474474444 2001.

National data for adults

- Improvements have been noted over the past 25 to 30 years with regard to tooth decay among adults. Among most age groups, the average number of teeth per person affected by tooth decay (treated and untreated) has decreased, and the average number of teeth per



person that show no signs of infection, as well as the proportion of the population that is decay free, has increased. The most recent data are available for the period between 1971–74 and 1988–94. The trend shows that among 18–34-year-olds, permanent teeth without decay increased from an average of 15.7 permanent teeth to 19.6. Among those age 35–54, the average number of permanent teeth without decay increased from 12.0 to 13.5 over the same time period.⁸

- White adults have lower proportions of untreated decayed teeth than African American and Mexican-American adults, regardless of poverty level status.⁹

Notes

- Among 5–17-year-olds, tooth decay is more than five times as common as a reported history of asthma and seven times as common as hay fever.¹⁰
- Tooth decay affects 94 percent of adults aged 18 and older.¹¹

Sealants

Dental sealants are thin plastic coatings applied to the chewing surfaces of the molars (back teeth). Most tooth decay in children and teens occurs in these surfaces. Sealants cover the chewing surfaces to prevent decay. First molars usually erupt when a child is about 6 years of age. Second molars appear at about age 12. It is best if the sealant is applied soon after the molars have erupted, before the teeth have a chance to decay. For that reason, children between the ages of 5 and 15 benefit most from sealants.¹²

A November 2001 CDC study found that there was typically a 60 percent decrease in tooth decay on the chewing surfaces of posterior teeth after sealant application in school-based or school-linked dental sealant programs.¹³

There are no statewide studies of children with sealants in Texas. However, the 2001 UTHSC study mentioned above gathered data on sealants in seven counties in southeast Texas around Houston. The study found the prevalence of dental sealants among all survey participants to be between 27.8 percent (Matagorda County) and 51 percent (Galveston County). Preliminary analyses of the UTHSC data indicate that among seventh and tenth graders, Hispanics were less likely to have dental sealants compared to whites.¹⁴

One national study of dental sealants in children found that 23 percent of all 8-year-olds, and 3 percent of 8-year-olds living below the poverty line, had sealants.¹⁵

Fluoridation

During the second half of the 20th century, a major decline in the prevalence and severity of dental caries resulted from the identification of fluoride as an effective method of prevention. Fluoridation of the public water supply is the most equitable, cost-effective, and cost-saving method of delivering fluoride to the community.¹⁶ Fluoridation of community water has been credited with reducing tooth decay by 50–60 percent in the U.S. since World War II.¹⁷



Fluoride works by stopping or even reversing the tooth decay process. It keeps tooth enamel strong and solid by preventing the loss of (and enhancing the re-attachment of) important minerals from the tooth enamel.¹⁸

- About 30 percent of Texas residents receive less than optimal levels of fluoride.¹⁹
- ▼ In the U.S. in 2000, approximately 162 million persons or 65.8 percent of the population served by public water systems (more than 246 million people) received optimally fluoridated water compared with 144 million, or 62.1 percent, in 1992.²⁰

Fiscal Notes

- Statistical analysis of dental care costs and county water fluoride levels show that for an initial one part per million (ppm) increase in water fluoride level (from 0.0 to 1.0 ppm fluoride), the average cost of dental care per child declined \$24 per year.²¹
- For each dollar spent on water fluoridation, as much as \$80 could be saved in treatment costs related to dental caries in children.²²

Last Dentist Visit

Most dentists recommend routine teeth cleaning every 6 months and a more complete dental exam every year.

During a dental exam, the dentist checks for signs of tooth decay and oral cancer and examines the tongue and glands inside the mouth. The dentist or dental hygienist who cleans teeth removes the plaque that remains even after teeth brushing and flossing. Without regular professional cleaning, plaque can build up and harm teeth and gums.²³

Table 9.2 shows the percentage of the Texas adult population by race/ethnicity, gender, and age who had visited a dentist or dental clinic in the past year and compares these results to the median national performance of 50 states, Puerto Rico, and the District of Columbia.²⁴

- In 1999, fewer than 65 percent of adult Texans had visited a dentist or dental clinic in the past year. This percentage is less than the national average of 68.1 percent.
- For both genders, each major racial/ethnic group, and each age group, Texans visited a dentist less often than the comparable group on the national level.
- Hispanics in Texas were less likely than African Americans and whites to have visited a dentist in the past year. Nationally, African Americans and Hispanics were equally likely to have visited a dentist and both groups were less likely than whites to have visited a dentist.
- Women are more likely than men to visit a dentist at both the state and national levels.
- In Texas, the 25–34 age group reported the lowest percentage of persons who had visited a dentist in the past 12 months. Nationwide, the age group with the lowest percentage was the 65+ age group.



Table 9.2 Visited a Dentist or Dental Clinic in the Past Year

Texas and U.S., 1999

| | Texas % Visited a Dentist in the Past 12 Months | U.S. Median* % visited a dentist in the past 12 months |
|-----------------------|--|---|
| All | 61.4 | 68.1 |
| Race/Ethnicity | | |
| White | 67.0 | 70.8 |
| African American | 59.0 | 63.1 |
| Hispanic | 50.0 | 63.2 |
| Gender | | |
| Males | 59.4 | 65.5 |
| Females | 63.3 | 70.5 |
| Age | | |
| 18–24 | 61.9 | 72.6 |
| 25–34 | 57.8 | 66.2 |
| 35–44 | 61.0 | 70.4 |
| 45–54 | 64.3 | 73.1 |
| 55–64 | 62.7 | 67.5 |
| 65+ | 62.5 | 62.3 |

*U.S. median based on observations from 50 states, Puerto Rico, and the District of Columbia

Source: Texas Department of Health, Texas Behavioral Risk Factor Surveillance System, 1999.



An environment that is safe and free of harmful chemicals and pollutants is necessary to sustain healthy populations. The “environment” refers to all the external factors influencing the life of an individual, which can include both physical and social factors.¹ In this chapter, the focus will be on the quality of air (outdoor and indoor), drinking water, and surface water.

Outdoor Air Quality²

Improving air quality in Texas continues to be a complex challenge. Different areas of the state have different air-quality challenges. The large concentrations of petrochemical facilities in the Gulf Coast area pose air-quality problems quite different from those faced by the service and light-industrial economies of north and central Texas. In urban areas, concentrated vehicular traffic contributes to air quality problems while, in rural and agricultural parts of the state, air quality issues usually center on dust, odors, and other pollutants from widely dispersed activities. Emerging air quality issues being addressed around the state include the atmospheric deposition of mercury and the regional transport of pollutants that contribute to the formation of ozone, haze, and particulate air pollution.

With more than 80 percent of Texas’ population living in urban areas, air quality is heavily influenced by the rising number of vehicles and the miles they are driven, and by increasing industrial growth and construction activity. National Ambient Air Quality Standards (NAAQS) have been established for six “criteria pollutants” that are of public health concern: ground-level ozone (smog), particulate matter (PM₁₀), lead, nitrogen dioxide, sulfur dioxide, and carbon monoxide.

While most Texans enjoy clean air, a number of urban areas have specific air pollution problems. Texas is currently in compliance with the NAAQS for lead, nitrogen dioxide, and sulfur dioxide. However, several areas of the state have violated the NAAQS for ozone, and one area for carbon monoxide and particulate matter (PM₁₀). The federal Environmental Protection Agency (EPA) designates those areas of the state that violate the NAAQS as “nonattainment areas.”

Ozone

Unlike most pollutants, ozone is not directly emitted into the air but is formed in the atmosphere by the reaction of nitrogen oxides and volatile organic compounds in the presence of sunlight and heat. Of course, sunlight and heat are abundant in Texas in the summer months. Ground-level ozone is the primary ingredient of smog, and can affect lung function and aggravate respiratory diseases such as asthma and bronchitis.

Ground-level ozone pollution continues to be the most widespread air-quality problem in the nation, affecting the public in nearly 100 major cities. The EPA has established the maximum acceptable concentration of ozone in any 1-hour period at 0.12 parts per million (ppm). If any ambient air monitor records concentrations above that amount more than three times in any consecutive three-year interval, the affected area can be classified as “nonattainment” of federal air quality standards and therefore subject to regulatory efforts to bring the area into compliance. Texas has 16 counties in four urban areas that are



currently designated as nonattainment for the 1-hour ozone standard. Almost half of the state's population resides in these affected areas (See Table 10.1).

Table 10.1 Areas in Texas That Exceed the 1-Hour Federal Ozone Standard, 2001

| Area | # of Counties | Total County Population* | 1-hour Ozone Design Value (ppm) † |
|----------------------|---------------|--------------------------|-----------------------------------|
| Houston–Galveston | 8 | 4,669,571 | 0.182 |
| Dallas–Fort Worth | 4 | 4,589,769 | 0.137 |
| Beaumont–Port Arthur | 3 | 385,090 | 0.121 |
| El Paso | 1 | 679,222 | 0.120 |
| Total | 16 | 10,323,652 | — |

Source: Texas Natural Resources Conservation Commission.

*Based on 2000 Census.

†1-hour ozone standard is 0.12 ppm.

Carbon Monoxide

Carbon monoxide is produced by the incomplete combustion of fuels, mainly from transportation sources such as trucks and cars. El Paso is the only city in Texas designated as nonattainment for carbon monoxide. The mountains surrounding El Paso and Ciudad Juárez, Mexico, create a common basin in which pollution is often trapped in a shallow layer next to the ground by temperature inversions. Episodes are most frequent in November and December, with occasional episodes in October and January. El Paso has not violated the standard for carbon monoxide more than once per year since 1996.

Particulate Matter

Particulate matter includes dirt, dust, smoke, and a complex mixture of chemicals that are small enough to be inhaled and travel deep within the respiratory system, causing decreased lung function and may aggravate cardiovascular disease and respiratory diseases such as asthma. Coarse particles, between 2.5 and 10 microns in size, often come from unpaved roads, construction activities, motor vehicle traffic, and dust storms. Finer particles, those less than 2.5 microns, tend to be emitted from combustion sources or are formed from gases such as sulfates.

A federal health-based standard for particulate matter less than 10 microns (PM₁₀) has been in place since 1987. El Paso is the only area in the state that has been designated as a nonattainment area for PM₁₀. With the exception of an exceedence of the standard at one air monitor, monitoring data from 1997 through 1999 from El Paso has demonstrated compliance with the PM₁₀ standard. The possible ramifications of these readings and redesignation efforts are under discussion with EPA.



In 1997 the EPA adopted new federal standards for microns less than 2.5 microns (PM_{2.5}), because scientific evidence suggests that exposure to those fine particles poses a significant health threat.

Indoor Air Quality

EPA studies of human exposure to air pollutants indicate that indoor air levels of many pollutants may be 2–5 times — and occasionally more than 1,000 times — higher than outdoor levels. These levels of indoor air pollutants are of particular concern because it is estimated that most people spend as much as 90 percent of their time indoors. Infants, the elderly, persons with chronic diseases, and urban residents may spend even more time indoors. Because many people spend a great deal of time at home, school, or the workplace, these places are of particular concern for air quality.³

Sources of indoor air pollution include: building materials and furnishings; biological agents such as bacteria and mold; secondhand smoke; products for household cleaning, personal care, or hobbies; central heating and cooling systems and humidification devices; pesticides; and oil, gas, kerosene, or wood combustion sources. Poor fresh air ventilation of buildings and residences exacerbates indoor air pollution. As air pollution concentration increases in indoor environments, the health, comfort, and productivity of residents and workers may be impaired.⁴

Adverse health effects related to indoor air pollution may include irritation of the eyes, nose, and throat; headaches; dizziness; fatigue; and allergy-like symptoms. Usually these symptoms are short in duration and disappear when the person is away from the source. More serious symptoms, such as asthma and severe respiratory tract inflammation, may also affect sensitive individuals after exposure to certain indoor air pollutants. There is a tremendous amount of variation in the sensitivity and reaction of individuals exposed to indoor air pollutants.⁵

The data are sparse regarding “safe” levels of chemicals or biologicals in home, office, or school settings. Concentrations of indoor air pollution may produce illness in some people, and these levels are usually well below “occupational” levels, which are used for industrial settings. The lack of sound health-based risk data and the variability of adverse health outcomes in the general public have precluded setting standards for indoor air quality. Considerably more research is needed in this area. Two laws enacted in Texas form the beginning of standards for indoor air quality. In 1995, an act of the Legislature required TDH to set voluntary guidelines for indoor air quality in public schools. The guidelines became effective May 10, 1998. In 2001, a law was passed, requiring TDH to develop voluntary guidelines for indoor air quality in buildings owned or leased by state or local government.⁶

Indoor air quality problems within a building can generally be improved by providing sufficient fresh outside air and by reducing major sources of indoor air pollution within the building.⁷

Drinking Water Quality

Ensuring safe and high-quality drinking water is of vital importance to the health of Texans. Drinking water of poor quality can cause adverse health effects, both acute and chronic. Acute effects occur within hours or days after consuming a contaminant. Most often the body’s immune system can fight off these microbial contaminants, and these acute contaminants typically do not have permanent effects. However, when high enough levels of contaminants are present, they can make people ill, and can be dangerous or deadly, especially for persons with weakened immune systems. Chronic effects may occur when people



consume a contaminant at unsafe levels for several years. Drinking water contaminants known to have chronic effects include chemicals (such as disinfection byproducts, solvents, and pesticides), radionuclides (such as radium), and minerals (such as arsenic). Chronic effects of drinking water contaminants may include cancer, liver or kidney problems, or reproductive difficulties.⁸

Drinking water standards, which apply after water is treated, are divided into two groups: primary and secondary standards. The primary standards are set to protect the health of consumers by setting maximum contaminant levels (MCL) for chemical and microbial contaminants. MCLs are defined in the federal Safe Drinking Water Act as the maximum permissible level of any water contaminant delivered to a public water system user. Secondary standards are set to ensure aesthetically pleasing taste, color, and odor of drinking water.⁹ When public water supplies show excessive bacteria, the Texas Natural Resource Conservation Commission provides technical assistance to help improve those water supplies. These efforts have led to the high compliance rate for bacteria standards across the state.

Texas data

- More than 97 percent of public water systems in Texas met or exceeded the standards for bacteria in 1999. In 1995, 82 percent of the systems met bacteria standards.¹⁰
- Violations for drinking water due to high bacteria counts have decreased from 401 violations in 1994 to 146 in 1999.¹¹ Most of the chemical violations statewide are due to high fluoride levels that naturally occur in groundwater and nitrate levels that may result from fertilizers, feedlots, and wastewater treatment in the natural ecosystem.¹²
- During the period 1997–1999, Texas had two reportable waterborne disease outbreaks, which affected 1,439 people.¹³

Surface Water Quality¹⁴

Texas is covered by more surface water than any other of the lower 48 states. Texas' Surface Water Quality Standards set out explicit water-quality targets for individual bodies of water. Standards protect water uses such as maintenance of aquatic life, contact or noncontact recreation, and water for public supplies. If water quality in a river basin or estuary segment is determined not to meet a state water quality standard then it is considered “impaired.”

Slightly over 4,000 miles of rivers and streams, 628,000 acres of reservoirs, and 756 square miles of estuaries were reported as impaired in 2000. For the assessed waters in 2000, 70 percent of stream miles, 62 percent of estuary areas, and 62 percent of the reservoir areas fully met their uses (were not impaired). Since 1997, the reported proportion of assessed water bodies meeting all their uses has dropped from about 89 percent to 79 percent. This drop was likely due to an increase in monitoring efforts and detection of previously unidentified impairments rather than an actual decline in overall water quality.

Water bodies may be impaired for one or more reasons, including high levels of fecal coliform bacteria, low levels of dissolved oxygen, high salinity concentrations, and elevated metals, pesticides, and other toxic substances in water, sediment, or tissue. Impairments can also result from unacceptable pH, temperature, or other parameters that prevent waters from being used for their normal purposes. Generally, only 11 percent



of impairments can be related solely to point sources of pollution and only 28 percent to specific types of nonpoint sources. The cause of the majority (61 percent) of impairments is unknown nonpoint sources.

Contamination of water used for drinking, fishing, swimming, and recreational activities continues to be a health concern. Some of the more common surface water health effects are discussed below.

Vibrio parahaemolyticus is an example of a bacterium that can cause illness after contact with saltwater or consumption of contaminated seafood. *V. parahaemolyticus* is known to cause gastroenteritis and wound infections in exposed individuals. Gastroenteritis with associated diarrhea, abdominal cramping, fever, and chills can result from persons eating contaminated seafood. Septicemia can also develop. In Texas, *V. parahaemolyticus* infections have been reported in 42 persons between 1988 and 1997. Most cases reported during this period included wound infections. In 1998, a large outbreak of *V. parahaemolyticus* infections was reported from consumption of Galveston Bay oysters. Over 400 people from 13 states became ill.

One to three cases of primary amebic meningoencephalitis (PAM) are also reported statewide each year. Almost all PAM cases result in fatalities. Three deaths from PAM were reported in Texas in 2001. These three deaths, all children, occurred after exposure in recreational water to *Naegleria fowleri*, an ameba that is ubiquitous in soils and untreated water. Warm weather and drought can decrease water supply and impair a body of water creating conditions that are particularly amenable for the ameba to thrive.

Since fish and shellfish can accumulate certain chemical contaminants in tissue, fishing is prohibited or advisories are issued when monitoring identifies a potential health risk due to contamination of seafood. Seven bodies of water (Upper Lavaca Bay, Trinity River, Donna Irrigation System, Fosdic Lake, Echo Lake, Mountain Creek Lake, and Lake Como) are designated as prohibited fishing areas. Fish consumption advisories have been issued for bodies of water located in 21 Texas counties¹⁵ meaning that regular consumption of fish or shellfish from them may increase the risk of exposure to the detected contaminants.

The hepatitis A virus (HAV) incidence for the 13 border counties (27.8 per 100,000 population) is twice the statewide incidence of 12.8 per 100,000 population. This higher HAV rate in the border counties may be due in part to discharges of raw sewage along the U.S.-Mexico border.



The information in this report provides comprehensive documentation of the current health status of Texans. When viewing the data as a whole, some findings are worth reporting and considering in making plans to address health status in Texas. These findings are a starting place for the proposed stakeholder steering committee discussions.

1. Coordination counts.

Many public and private entities do crucial work in addressing the health of Texans. Examples of some important coordination and collaboration efforts exist. However, Texas generally lacks a coordinated approach to establishing health goals, having individual organizations take responsibility for reaching those goals, measuring the impact of coordinated efforts, and making adjustments over time.

2. Healthy behaviors are key.

The topics discussed in this report are the major or emerging issues that affect the health of Texans. For the majority of these health conditions, adopting healthy behaviors is the key to avoiding or reducing their negative impacts. How to get Texans, individually and collectively, to adopt healthy behaviors is the primary question left for further investigation and action after understanding the major health threats described here.

Despite the strong role individual behaviors can play in improving the state's health, it must also be recognized that some key factors influencing health are not generally changeable by individuals. Such things as pollution, poor health infrastructure, low-quality educational systems, and economic hardship must often be addressed by policy decisions at the community level or above.

3. Different groups have different challenges and resiliencies.

Available data make it clear that some Texans experience health differently depending on their race/ethnicity, gender, and age group. Other data show important differences by region, socioeconomic status, educational attainment, family structure, culture, language, etc. While some work has been done toward comprehending why some health outcomes are tied to these characteristics, generally our understanding is limited.

4. Health affects the economy.

The costs of diseases and their consequences highlighted throughout this report are staggering. Investing in creating a culture of health and fitness in Texas makes economic sense.

5. Data, data, data.

Understanding the health of Texans depends on data that are current, accurate, comparable over time and location, and easily accessible. For some important diseases and health conditions in Texas, the data do not meet these criteria.



Executive Summary

1. Texas Department of Health, Bureau of Vital Statistics. *2000 Annual Report, Mortality*. Available at: <<http://www.tdh.state.tx.us/bvs/stats00/contents.htm#death>>. Accessed June 6, 2002.
2. Anderson RN. Deaths: Leading Causes for 1999. *National Vital Statistics Report*, 2001 Oct 12;49(11):1. Available at: <http://www.cdc.gov/nchs/data/nvsr/nvsr49/nvsr49_11.pdf>. Accessed April 1, 2002.
3. Texas Department of Health, Bureau of Vital Statistics. *2000 Annual Report, Mortality*. Available at: <<http://www.tdh.state.tx.us/bvs/stats00/contents.htm#death>>. Accessed June 6, 2002.
4. Anderson RN. Deaths: Leading Causes for 1999. *National Vital Statistics Report*, 2001 Oct 12;49(11):1. Available at: <http://www.cdc.gov/nchs/data/nvsr/nvsr49/nvsr49_11.pdf>. Accessed April 1, 2002.
5. Texas Department of Health, Bureau of Vital Statistics. *2000 Annual Report, Mortality*. Available at: <<http://www.tdh.state.tx.us/bvs/stats00/contents.htm#death>>. Accessed June 6, 2002.
6. Anderson RN. Deaths: Leading Causes for 1999. *National Vital Statistics Report*, 2001 Oct 12;49(11):1. Available at: <http://www.cdc.gov/nchs/data/nvsr/nvsr49/nvsr49_11.pdf>. Accessed April 1, 2002.
7. Texas Department of Health, Texas Behavioral Risk Factor Surveillance System, 2000.
8. Texas Department of Health, Bureau of Chronic Disease and Tobacco Prevention. *Results of 2001 Texas Youth Tobacco Survey*. In preparation.
9. Texas Department of Health, Texas Behavioral Risk Factor Surveillance System, 2000.
10. Texas Department of Health, Bureau of Chronic Disease and Tobacco Prevention. *Results of 2001 Texas Youth Risk Behavior Survey*. In preparation.
11. Texas Department of Health, Texas Behavioral Risk Factor Surveillance System, 2000.
12. Texas Department of Health. Bureau of Chronic Disease and Tobacco Prevention. *Results of the 2001 Texas Youth Risk Behavior Survey*. In preparation.
13. Texas Department of Health, Texas Behavioral Risk Factor Surveillance System, 1999 and 2000.
14. Texas Department of Health, Bureau of Chronic Disease and Tobacco Prevention. *Results of 2001 Texas Youth Risk Behavior Survey*. In preparation.
15. Wallisch LS. *2000 Texas Survey of Substance Use Among Adults*, Austin: Texas Commission on Alcohol and Drug Abuse. July 2001. Available at: <<http://www.tcada.state.tx.us/research/AdultHousehold.pdf>>. Accessed April 13, 2002.



16. Substance Abuse and Mental Health Services Administration, Office of Applied Studies. *National Household Survey on Drug Abuse*. 2000. Available at: <<http://www.samhsa.gov/oas/p0000016.htm#standard>>. Accessed April 13, 2002.
17. Texas Department of Health, Bureau of Chronic Disease and Tobacco Prevention, *2001 Texas Youth Risk Behavior Survey, Summary Findings*. In preparation.
18. Texas Department of Health, Texas Behavioral Risk Factor Surveillance System, 1999.
19. Texas Department of Health, Texas Behavioral Risk Factor Surveillance System, 2000.
20. Texas Department of Health, Bureau of Vital Statistics. *Table 20B — Deaths from Selected Causes — 2000 Texas Residents by Race/Ethnicity, Sex and Age*. Available at: <http://www.tdh.state.tx.us/bvs/stats00/annr_hm/00t20b.htm#CARDIO>. Accessed May 20, 2002.
American Heart Association. *2002 Heart and Stroke Statistical Update*. Available at: <<http://www.americanheart.org/presenter.jhtml?identifier=3000090>>. Accessed May 20, 2002.
21. Texas Department of Health, Bureau of Chronic Disease and Tobacco Prevention.
22. Texas Department of Health, Bureau of Chronic Disease and Tobacco Prevention.
23. American Cancer Society. *Cancer Facts and Figures 2002*. Available at: <http://www.cancer.org/eprise/main/docroot/stt/stt_0>. Accessed April 10, 2002.
24. Texas Department of Health, Cancer Registry Division, *Texas Cancer Mortality, 2000* (April 2002 draft). Texas Department of Health, Bureau of Chronic Disease and Tobacco Prevention.
25. Texas Department of Health, Cancer Registry Division, *Texas Cancer Mortality, 2000* (April 2002 draft).
26. Texas Department of Health, Bureau of Vital Statistics. *2000 Annual Report. Tables. Deaths*. Available at: <<http://www.tdh.state.tx.us/bvs/stats00/contents.htm#death>>. Accessed April 10, 2002.
Anderson RN. Deaths: Leading Causes for 1999. *National Vital Statistics Report, 2001* Oct 12;49(11):1. Available at: <http://www.cdc.gov/nchs/data/nvsr/nvsr49/nvsr49_11.pdf>. Accessed April 1, 2002.
27. Texas Department of Health, Bureau of Chronic Disease and Tobacco Prevention.
28. Henkel J. New Success Against Strokes. *FDA Consumer*. March/April 1998:12–16. Available at: <http://www.fda.gov/fdac/features/1998/298_stroke.html>. Accessed April 10, 2002.
29. Texas Department of Health, Bureau of Vital Statistics. *2000 Annual Report. Tables. Deaths*. Available at: <<http://www.tdh.state.tx.us/bvs/stats00/contents.htm#death>>. Accessed April 10, 2002.
30. Texas Department of Health, Bureau of Chronic Disease and Tobacco Prevention.
31. Texas Department of Health, Texas Behavioral Risk Factor Surveillance System, 2000.
32. Texas State Data Center. Data for 2010 are based on migration growth scenario 0.5 projections. December 2001.
33. Texas Department of Health Osteoporosis. *Fast Facts about Osteoporosis*. Available at: <<http://www.tdh.state.tx.us/osteo/fastfacts.htm>>. Accessed April 11, 2002.



34. National Institutes of Health, Osteoporosis and Related Bone Diseases National Resource Center. *Fast Facts on Osteoporosis*. Available at: <<http://www.osteoporosis.org/osteofastfact.html>>. Accessed April 11, 2002.
35. Texas Department of Health, Texas Behavioral Risk Factor Surveillance System, 1999.
36. Texas Department of Health. *Texas Risk Factor Report, Arthritis 1999 Survey Data*. Available at: <<http://www.tdh.state.tx.us/chronicd/arth2000.pdf>>. Accessed April 11, 2002.
37. Texas Department of Health, Texas Behavioral Risk Factor Surveillance System, 1999. National Center for Chronic Disease Prevention and Health Promotion. *Arthritis*. Available at: <<http://www.cdc.gov/nccdphp/arthritis/index.htm>>. Accessed April 11, 2002.
38. Texas Department of Health, Texas Behavioral Risk Factor Surveillance System, 1999. Adams PF, Hendershot GE, Marano MA. Current estimates from the National Health Interview Survey, 1996. National Center for Health Statistics. *Vital Health Stat.* 1999; Series 10(200):93, table 62. Available at: <http://www.cdc.gov/nchs/data/series/sr_10/sr10_200.pdf>. Accessed April 11, 2002.
39. Elaine Braslow, Texas Department of Health, Bureau of Chronic Disease and Tobacco Prevention, personal communication, May 22, 2002. Texas Department of Health Alzheimer's Program. *Alzheimer's Disease Statistics*. Available at: <http://www.tdh.state.tx.us/osp/a_stats.htm>. Accessed April 11, 2002.
40. Texas Department of Health, Bureau of HIV and STD Prevention, surveillance data from Ed Weckerly, personal communication, May 17, 2002. National Institute of Allergy and Infectious Disease, *HIV/AIDS Statistics*, February 2002. Available at: <<http://www.niaid.nih.gov/factsheets/aidsstat.htm>>. Accessed April 19, 2002.
41. Texas Department of Health, Bureau of HIV and STD Prevention surveillance data from Ed Weckerly, personal communication, May 17, 2002. National Institute of Allergy and Infectious Disease, *HIV/AIDS Statistics*, February 2002. Available at: <<http://www.niaid.nih.gov/factsheets/aidsstat.htm>>. Accessed April 19, 2002.
42. Texas Department of Health, Bureau of HIV and STD Prevention, surveillance data from Ed Weckerly, personal communication, May 17, 2002.
43. Texas Department of Health, Bureau of HIV and STD Prevention, surveillance data from Ed Weckerly, personal communication, May 17, 2002.
44. Texas Department of Health, Bureau of HIV and STD Prevention, STD surveillance data from Ed Weckerly, personal communication, May 17, 2002.
45. Texas Department of Health, Bureau of HIV and STD Prevention, STD surveillance data from Ed Weckerly, personal communication, May 17, 2002. National Center for HIV, STD and TB Prevention. *Sexually Transmitted Disease Surveillance 2000*. Available at: <<http://www.cdc.gov/std/stats/TOC2000.htm>>. Accessed April 19, 2002.
46. Ed Weckerly, Texas Department of Health, Bureau of HIV and STD Prevention, personal communication, May 17, 2002. National Center for HIV, STD and TB Prevention. *Sexually Transmitted Disease Surveillance 2000*. Available at: <<http://www.cdc.gov/std/stats/TOC2000.htm>>. Accessed April 19, 2002.



47. Ed Weckerly, Texas Department of Health, Bureau of HIV and STD Prevention, personal communication, May 17, 2002.
National Center for HIV, STD and TB Prevention. *Sexually Transmitted Disease Surveillance 2000*. Available at: <<http://www.cdc.gov/std/stats/TOC2000.htm>>. Accessed April 19, 2002.
48. Texas Department of Health. Associateship for Disease Control and Prevention. *Epidemiology Annual Report Online, 1999*. Available at: <<http://www.tdh.state.tx.us/epidemiology/99annual/frames/frames.htm>>. Accessed April 19, 2002.
49. Summary of Notifiable Diseases, United States, 1999. *MMWR* 2001 April 6;48(53):Table 3. Available at: <<http://www.cdc.gov/mmwr/preview/mmwrhtml/mm4853a1.htm>>. Accessed April 22, 2002.
50. Texas Department of Health. Associateship for Disease Control and Prevention. *Epidemiology Annual Report Online, 1999*. Available at: <<http://www.tdh.state.tx.us/epidemiology/99annual/frames/frames.htm>>. Accessed April 19, 2002.
Centers for Disease Control. *Tracking the Hidden Epidemics: Trends in STDs in the United States 2000*:22. Available at: <http://www.cdc.gov/nchstp/dstd/Stats_Trends/Trends2000.pdf>. Accessed April 19, 2002.
51. Texas Department of Health. Associateship for Disease Control and Prevention. *Epidemiology Annual Report Online, 1999*. Available at: <<http://www.tdh.state.tx.us/epidemiology/99annual/frames/frames.htm>>. Accessed April 19, 2002.
Summary of Notifiable Diseases, United States, 1999. *MMWR* 2001 April 6;48(53):Table 4. Available at: <<http://www.cdc.gov/mmwr/preview/mmwrhtml/mm4853a1.htm>>. Accessed April 22, 2002.
52. Texas Department of Health. Infectious Disease Epidemiology & Surveillance Division. *Hepatitis C Annual Report: 1999*. Available at: <<http://www.tdh.state.tx.us/ideas/factsht/Annualreport1999.htm>>. Accessed April 22, 2002.
Summary of Notifiable Diseases, United States, 1999. *MMWR* 2001 April 6;48(53):Table 4. Available at: <<http://www.cdc.gov/mmwr/preview/mmwrhtml/mm4853a1.htm>>. Accessed April 22, 2002.
53. National Center for Infectious Diseases. *Viral Hepatitis C Fact Sheet*. Available at: <<http://www.cdc.gov/ncidod/diseases/hepatitis/c/fact.htm>>. Accessed April 23, 2002.
54. Kim WR, Poterucha JJ. Is It Time for Mass Screening for Hepatitis C? *American Journal of Medicine* 2001 Dec 1;111(8):667.
55. *Health Disparities in Texas: An Epidemiologic Review of Priority Health Outcomes*. Austin: Texas Department of Health. March 2002:69.
56. Texas Department of Health, Tuberculosis Elimination Division, unpublished data. May 17, 2002.
57. National Tuberculosis Surveillance System, Division of Tuberculosis Elimination, Centers for Disease Control and Prevention. Provisional 2001 data. March 5, 2002.
58. Texas Department of Health, Tuberculosis Elimination Division, unpublished data. May 17, 2002.
59. David Bastis, Texas Department of Health, Bureau of Immunization and Pharmacy Support, personal communication, May 21, 2002.



60. National, State, and Urban Area Vaccination Coverage Levels Among Children Aged 19–35 Months — United States, 2000. *MMWR* 2001 August 3;50(30):638. Available at: <http://www.cdc.gov/mmwr/preview/mmwrhtml/mm5030a1.htm>. Accessed April 22, 2002.
61. Lisa Marengo, Texas Department of Health, Bureau of Communicable Disease Control, Infectious Disease Epidemiology and Surveillance Division, personal communication, May 22, 2002.
62. Lisa Marengo, Texas Department of Health, Bureau of Communicable Disease Control, Infectious Disease Epidemiology and Surveillance Division, personal communication, May 22, 2002.
63. Update: Investigation of Bioterrorism-Related Anthrax — Connecticut, 2001. *MMWR* 2001 December 7;50(48):1077–79. Available at: <http://www.cdc.gov/mmwr/preview/mmwrhtml/mm5048a1.htm>. Accessed April 23, 2002.
Jernigan JA, et al. Bioterrorism-related inhalational anthrax: The first 10 cases reported in the United States. *Emerg Infect Dis*. 2001 Nov-Dec;7(6):933–44. Available at: <http://www.cdc.gov/ncidod/EID/vol7no6/pdf/jernigan.pdf>. Accessed April 23, 2002.
64. Center for Civilian Biodefense Strategies. *Smallpox*. Available at: <http://hopkins-biodefense.org/pages/agents/agentsmallpox.html>. Accessed April 23, 2002.
65. Irons JV, Sullivan TD, Cook EBM, Cox GW, and Hale RA. Outbreak of Smallpox in the Lower Rio Grande Valley of Texas in 1949. *American Journal of Public Health*. Jan. 1953;43(1):25–29.
66. Center for Civilian Biodefense Strategies. *Smallpox*. Available at: <http://hopkins-biodefense.org/pages/agents/agentsmallpox.html>. Accessed April 23, 2002.
67. Texas Department of Health, Bureau of Vital Statistics. *Summary of Vital Statistics for Texas 2000*. Available at: http://www.tdh.state.tx.us/bvs/stats00/annr_hm/00summ.htm. Accessed April 5, 2002.
68. Hoyert DL, Freedman MA, Strobino DM, Guyer B. Annual Survey of Vital Statistics. *Pediatrics*. 2001;108(6):1247.
69. Texas Department of Health, Bureau of Vital Statistics. *2000 Mortality*. Available at: <http://www.tdh.state.tx.us/bvs/stats00/text/00mortal.htm>. Accessed April 5, 2002.
Hoyert DL, Freedman MA, Strobino DM, Guyer B. Annual Survey of Vital Statistics. *Pediatrics*. 2001;108(6):1247.
70. Williams et al. Prevalence of spina bifida and anencephaly during the transition to mandatory folic acid fortification in the United States. *Teratology* 2002(66);33–39.
71. *Texas Birth Defects Monitor*. Recent High rates of Anencephaly in Laredo. Austin: Texas Department of Health June 2001. 7(1):1–2.
72. Texas Department of Health. Bureau of Vital Statistics. *2000 Annual Report — Natality*. Available at: <http://www.tdh.state.tx.us/bvs/stats00/text/00natal.htm>. Accessed April 8, 2002.
73. Martin JA, Hamilton BE, Ventura SJ, Menacker F, Park MM. Births: final data for 2000. *National Vital Statistics Report* 2002 Feb 12;50(5):12–13. Available at: http://www.cdc.gov/nchs/data/nvsr/nvsr50/nvsr50_05.pdf. Accessed May 31, 2002.



74. Texas Department of Health. Bureau of Vital Statistics. *2000 Annual Report — Natality*. Available at: <<http://www.tdh.state.tx.us/bvs/stats00/text/00natal.htm>>. Accessed April 8, 2002.
75. Hoyert DL, Freedman MA, Strobino DM, Guyer B. Annual Survey of Vital Statistics. *Pediatrics*. 2001;108(6):1241–55.
76. Office of Health Information and Analysis. *Healthy People 2000 Health Status Indicators by Texas Public Health Regions and Race/Ethnicity, 1990–1999. Part One*. Austin: Texas Department of Health. February 2002:34. Available at: <<http://www.tdh.state.tx.us/dpa/hppt1.pdf>>. Accessed April 5, 2002.
77. Texas Department of Health. Bureau of Vital Statistics. *2000 Annual Report — Natality*. Available at: <<http://www.tdh.state.tx.us/bvs/stats00/text/00natal.htm>>. Accessed April 8, 2002.
Hoyert DL, Freedman MA, Strobino DM, Guyer B. Annual Survey of Vital Statistics. *Pediatrics* 2001;108(6):1241–55.
78. Leading Health Indicators. In: US Department of Health and Human Services. *Healthy People 2010: Understanding and Improving Health*. Vol. 1, 2nd ed. Boston: Jones and Bartlett. 2000:31. Available at: <<http://www.health.gov/healthypeople/Document/tableofcontents.htm#volume1>>. Accessed April 12, 2002.
Aligne CA, Stoddard JJ. Tobacco and children. An economic evaluation of the medical effects of parental smoking. *Archives of Pediatrics and Adolescent Medicine*. 1997 Jul;151(7):648–53.
79. National Center on Birth Defects and Developmental Disabilities. *Fetal Alcohol Syndrome*. Available at: <<http://www.cdc.gov/ncbddd/fas>>. Accessed April 8, 2002.
80. Buescher PA, et al. The quality of the new birth certificate data: A validation study in North Carolina. *American Journal of Public Health*. August 1993, 83(8): 1163–65.
81. Bob Woldman, Texas Department of Health, Bureau of Vital Statistics, personal communication, June 11, 2002.
82. Martin JA, Hamilton BE, Ventura SJ, Menacker F, Park MM. Births: Final data for 2000. *National Vital Statistics Report* 2002 Feb 12;50(5):12–13. Available at: <http://www.cdc.gov/nchs/data/nvsr/nvsr50/nvsr50_05.pdf>. Accessed May 31, 2002.
83. Bob Woldman, Texas Department of Health, Bureau of Vital Statistics, personal communication, June 11, 2002.
Martin JA, Hamilton BE, Ventura SJ, Menacker F, Park MM. Births: final data for 2000. *National Vital Statistics Report* 2002 Feb 12;50(5):12–13. Available at: <http://www.cdc.gov/nchs/data/nvsr/nvsr50/nvsr50_05.pdf>. Accessed May 31, 2002.
84. Alan Guttmacher Institute. *Facts in Brief: Teen Sex and Pregnancy*. September 1999. Available at: <http://www.agi-usa.org/pubs/fb_teen_sex.html>. Accessed April 8, 2002.



85. Texas Department of Health. Bureau of Vital Statistics. *2000 Annual Report — Natality*. Available at: <<http://www.tdh.state.tx.us/bvs/stats00/text/00natal.htm>>. Accessed April 8, 2002.
Texas Department of Health. Bureau of Vital Statistics. *1994 Annual Report — Natality*. Available at: <<http://www.tdh.state.tx.us/bvs/stats94/text/natal94.htm>>. Accessed April 8, 2002.
Hoyert DL, Freedman MA, Strobino DM, Guyer B. Annual Survey of Vital Statistics. *Pediatrics* 2001;108(6):1241–55.
Martin JA, Hamilton BE, Ventura SJ, Menacker F, Park MM. Births: final data for 2000. *National Vital Statistics Report* 2002 Feb 12;50(5):12–13. Available at: <http://www.cdc.gov/nchs/data/nvsr/nvsr50/nvsr50_05.pdf>. Accessed May 31, 2002.
86. Office of Health Information and Analysis. *Healthy People 2000 Health Status Indicators by Texas Public Health Regions and Race/Ethnicity, 1990–1999. Part One*. Austin: Texas Department of Health. February 2002:36. Available at: <<http://www.tdh.state.tx.us/dpa/hppt1.pdf>>. Accessed April 5, 2002.
87. Texas Department of Health. Bureau of Vital Statistics. *Texas Vital Statistics. 2000 Annual Report*. Available at: <<http://www.tdh.state.tx.us/bvs/stats00/annrpt.htm>>. Accessed June 4, 2002.
88. Texas Department of Health. Bureau of Vital Statistics. *Texas Vital Statistics. 2000 Annual Report*. Available at: <<http://www.tdh.state.tx.us/bvs/stats00/annrpt.htm>>. Accessed June 4, 2002.
89. Kathy Griffis-Bailey, Texas Department of Health, Traumatic Brain Injury Project, personal communication, May 10, 2002.
90. Office of Health Information and Analysis. *Healthy People 2000 Health Status Indicators by Texas Public Health Regions and Race/Ethnicity, 1990–1999. Part One*. Austin: Texas Department of Health. February 2002:14. Available at: <<http://www.tdh.state.tx.us/dpa/hppt1.pdf>>. Accessed April 5, 2002.
Texas Department of Public Safety. *2000 Crime in Texas Report*. Available at: <<http://www.txdps.state.tx.us/crimereports/Crime>>. Accessed June 4, 2002.
91. Texas Department of Public Safety. *2000 Crime in Texas Report*. Available at: <<http://www.txdps.state.tx.us/crimereports/Crime>>. Accessed June 4, 2002.
US Federal Bureau of Investigation. *Crime in the United States (2000)*. Available at: <<http://www.fbi.gov/ucr/ucr.htm>>. Accessed June 3, 2002.
92. Texas Department of Public Safety. *2000 Crime in Texas Report*. Available at: <<http://www.txdps.state.tx.us/crimereports/Crime>>. Accessed June 4, 2002.
US Federal Bureau of Investigation. *Crime in the United States (2000)*. Available at: <<http://www.fbi.gov/ucr/ucr.htm>>. Accessed June 3, 2002.
93. Texas Department of Mental Health and Mental Retardation. *Strategic Plan*. Austin: Texas Department of Mental Health and Mental Retardation. June 2000:52–54.
94. Texas Department of Mental Health and Mental Retardation. *Prevalence Data*. Available at: <<http://www.mhmr.state.tx.us/CentralOffice/ProgramStatisticsPlanning/Data.html>>. Accessed April 13, 2002.
95. National Institute of Mental Health. *The Numbers Count: Mental Disorders in America*. Available at: www.nimh.nih.gov/publicat/numbers.cfm. Accessed April 13, 2002.



96. National Institutes of Health. Mental Health and Mental Disorders. In: US Department of Health and Human Services. *Healthy People 2010: Understanding and Improving Health*. Vol. 2, 2nd ed. Boston: Jones and Bartlett. 2000:18-3. Available at: <<http://www.health.gov/healthypeople/Document/tableofcontents.htm#Volume2>>. Accessed April 12, 2002.
97. Texas Department of Health. Bureau of Vital Statistics. *Texas Vital Statistics. 2000 Annual Report*. Available at: <<http://www.tdh.state.tx.us/bvs/stats00/annrpt.htm>>. Accessed April 13, 2002.
Hoyert DL, Arias E, Smith BL, Murphy SL, Kochanek KD. Deaths: Final Data for 1999. *National Vital Statistics Report*, 2001 Sept 21;49(8). Available at: <http://www.cdc.gov/nchs/data/nvsr/nvsr49/nvsr49_08.pdf>. Accessed April 12, 2002.
98. Texas Department of Health. Bureau of Vital Statistics. *Texas Vital Statistics. 2000 Annual Report*. Available at: <<http://www.tdh.state.tx.us/bvs/stats00/annrpt.htm>>. Accessed April 13, 2002.
Keppel KG, Percy JN, Wagener DK. Trends in Racial and Ethnic-Specific Rates for the Health Status Indicators: United States: 1990–1998, *Healthy People 2000 Statistical Notes* No. 23, January 2002:5. Available at: <<http://www.cdc.gov/nchs/data/statnt/statnt23.pdf>>. Accessed April 13, 2002.
National Institute of Mental Health. *The Numbers Count, Mental Disorders in America*. Available at: www.nimh.nih.gov/publicat/numbers.cfm>. Accessed April 13, 2002.
99. Texas Department of Health. Bureau of Vital Statistics. *Texas Vital Statistics. 2000 Annual Report*. Available at: <<http://www.tdh.state.tx.us/bvs/stats00/annrpt.htm>>. Accessed April 13, 2002.
100. National Center for Chronic Disease Prevention and Health Promotion. *Children's Oral Health. Dental Sealants. Frequently Asked Questions*. Available at: <<http://www.cdc.gov/nccdphp/oh/child-sealants-faq.htm>>. Accessed April 5, 2002.
101. Dental Task Force of the Greater Houston Metropolitan Area, in collaboration with the Department of Dental Public Health and Dental Hygiene, Dental Branch, University of Texas Health Science Center at Houston, supported by the Texas Department of Health, Innovations Grant No. 74474474444 2001.
102. Satcher, D. *Oral Health in America: A Report of the Surgeon General*. Washington, DC: Department of Health and Human Services, US Public Health Service; 2000:64. Available at: <<http://www.nidr.nih.gov/sgr/sgrohweb/home.htm>>. Accessed April 5, 2002.
103. National Center for Chronic Disease Prevention and Health Promotion. *Children's Oral Health. Dental Sealants. Frequently Asked Questions*. Available at: <<http://www.cdc.gov/nccdphp/oh/child-sealants-faq.htm>>. Accessed April 5, 2002.
104. The Dental Task Force of the Greater Houston Metropolitan Area, in collaboration with the Department of Dental Public Health and Dental Hygiene, Dental Branch, University of Texas Health Science Center at Houston, supported by the Texas Department of Health, Innovations Grant No. 74474474444 2001.
105. National Center for Chronic Disease Prevention and Health Promotion. *Children's Oral Health. Dental Sealants Press Release*. August 31, 2001. Available at: <<http://www.cdc.gov/nccdphp/oh/child-sealants-pr.htm>>. Accessed April 5, 2002.
106. National Center for Chronic Disease Prevention and Health Promotion. *Recommendations for Using Fluoride to Prevent and Control Dental Caries in the United States*. August 2001. Available at: <<http://www.cdc.gov/nccdphp/oh/flfactcw2.htm>>. Accessed April 5, 2002.



107. Centers for Disease Control and Prevention. Populations Receiving Optimally Fluoridated Public Drinking Water — United States, 2000. *MMWR* 2002 Feb 22;51(7):144–47. Available at: <<http://www.cdc.gov/mmwr/preview/mmwrhtml/mm5107a2.htm>>. Accessed April 5, 2002.
108. Texas Department of Health, *Water Fluoridation Costs in Texas: Texas Health Steps (EPSDT-Medicaid)*. May 2000. Available at: <<http://www.tdh.state.tx.us/dental/flstudy.pdf>>. Accessed April 5, 2002.
109. Centers for Disease Control and Prevention Populations Receiving Optimally Fluoridated Public Drinking Water — United States, 2000. *MMWR* 2002 Feb 22;51(7):144–47. Available at: <<http://www.cdc.gov/mmwr/preview/mmwrhtml/mm5107a2.htm>>. Accessed April 5, 2002.
110. Texas Department of Health, Texas Behavioral Risk Factor Surveillance System, 1999.
111. Texas Natural Resource Conservation Commission. *State of the Texas Environment, Strategic Plan, Fiscal Years 2003–2007, Volume 2*. Available at: http://www.tnrcc.state.tx.us/admin/topdoc/sfr/035_02/035_02.html. Accessed July 19, 2002.
112. Texas Natural Resource Conservation Commission. *State of the Texas Environment, Strategic Plan, Fiscal Years 2003–2007, Volume 2*. Available at: http://www.tnrcc.state.tx.us/admin/topdoc/sfr/035_02/035_02.html. Accessed July 19, 2002.
113. Texas Natural Resource Conservation Commission. *State of the Texas Environment, Strategic Plan, Fiscal Years 2003–2007, Volume 2*. Available at: http://www.tnrcc.state.tx.us/admin/topdoc/sfr/035_02/035_02.html. Accessed July 19, 2002.



Chapter 1 Introduction

1. Constitution of the World Health Organization. In *Basic Documents*. 43rd ed. Geneva: World Health Organization; 2001:1.
2. Bernard J. Turnock *Public Health: What It Is and How It Works*. Gaithersburg, MD: Aspen; 1997:375
3. HRSA Workgroup for the Elimination of Health Disparities. *Eliminating Health Disparities in the United States*, Health Resources and Services Administration. November 2000:9. Available at: <<http://www.hrsa.gov/OMH/OMH/disparities/default.htm>>. Accessed March 29, 2002.
4. US Department of Health and Human Services. *Healthy People 2010: What Are its Goals?* Available at: <<http://www.health.gov/healthypeople/About/goals.htm>>. Accessed June 13, 2002.



Chapter 2: State Profile

1. Office of the State Demographer, Texas State Data Center. All items below in this section except where noted.
2. US Bureau of the Census. *Table DP-1. Profile of General Demographic Characteristics for Texas: 2000*. Available at: <<http://txsdc.tamu.edu/census/data/demoprof/>>. Accessed May 17, 2002.
3. Texas Health and Human Services Commission. *Population Projections for Texas: Years 2000-2040 by Gender and Race/Ethnicity*. Available at: <http://www.hhsc.state.tx.us/budget/cons_bud/dssi/00-40_TXProj_GenderRace.html>. Accessed May 17, 2002.
4. Texas State Data Center. Data for 2010 are based on migration growth scenario 0.5 projections. December 2001.
5. Gruenewald, DA and Brodtkin, KI. *Geriatric Emergencies: A Basic Review for Health Care Providers*. Available at: <<http://faculty.washington.edu/dgruen/>>. Accessed May 20, 2002.
6. Texas State Data Center. Data for 2010 are based on migration growth scenario 0.5 projections. December 2001.
7. Office of the State Demographer, Texas State Data Center.
8. Office of the State Demographer, Texas State Data Center.
9. Office of the State Demographer, Texas State Data Center.
10. Texas State Data Center. Data for 2010–2040 are based on migration growth scenario 0.5 projections. December 2001.
11. Office of the State Demographer, Texas State Data Center. Analysis by Texas Department of Health, Office of Health Information and Analysis.
12. Office of the State Demographer, Texas State Data Center. Analysis by Texas Department of Health, Office of Health Information and Analysis.
13. *66 Federal Register* 10695–97 (February 16, 2001).
14. US Bureau of the Census. March Current Population Survey (CPS) for selected historical years.
15. Dalaker, Joseph. *Poverty in the US: 2000*. US Census Bureau, September 2001:2. Current Population Reports, Series P60-214. Available at: <<http://www.census.gov/prod/2001pubs/p60-214.pdf>>. Accessed March 29, 2002.
16. US Bureau of the Census Current Population Survey 2001. Analysis by Texas Department of Health, Office of Health Information and Analysis.
17. Dalaker, Joseph. *Poverty in the US: 2000*. US Bureau of the Census, September 2001:2. Current Population Reports, Series P60-214. Available at: <<http://www.census.gov/prod/2001pubs/p60-214.pdf>>. Accessed March 29, 2002.



18. Texas State Data Center. US Bureau of the Census. March 2001 Current Population Survey (CPS).
19. Texas State Data Center. US Bureau of the Census. March 2001 Current Population Survey (CPS).
20. US Bureau of the Census, March 2001, Current Population Survey for Texas. All items below in this section except where noted.
21. Mills, Robert J. *Health Insurance Coverage: 2000*. US Bureau of the Census, September 2001:11. Current Population Reports. Series P60-215. Available at: <<http://www.census.gov/prod/2001pubs/p60-215.pdf>>. Accessed March 29, 2002.
22. Texas Blue Ribbon Task Force on the Uninsured. *Report to the 77th Legislature*. February 2001:2. Available at: <http://www.senate.state.tx.us/75r/senate/commit/archive/BR/Blue_Ribbon.pdf>. Accessed May 20, 2002.
23. Compiled from Directory of Active Hospitals, Bureau of Licensing and Compliance, Texas Department of Health and Hospital Tracking Database, Office of Health Information and Analysis, November 2001.
24. Texas Department of Health, Office of Health Information and Analysis, *2000 Cooperative AHA/TDH/THA Annual Survey of Hospitals*. Analysis by the Office of Health Information and Analysis.
25. Jim Arnold, Texas Department of Health, Bureau of Emergency Management, personal communication, February 6, 2002.
26. Bruce Gunn, Texas Department of Health, Health Professions Resource Center, personal communication, March 21, 2002.
27. Texas Department of Health, Bureau of Vital Statistics. *Summary of Vital Statistics for Texas 2000*. Available at: <http://www.tdh.state.tx.us/bvs/stats00/annr_hm/00summ.htm>. Accessed April 1, 2002.
28. Texas Department of Health, Bureau of Vital Statistics. *Summary of Vital Statistics for Texas 2000*. Available at: <http://www.tdh.state.tx.us/bvs/stats00/annr_hm/00summ.htm>. Accessed April 1, 2002.
29. Anderson RN. Deaths: Leading Causes for 1999. *National Vital Statistics Report*, 2001 Oct 12;49(11):1. Available at: <http://www.cdc.gov/nchs/data/nvsr/nvsr49/nvsr49_11.pdf>. Accessed April 1, 2002.
30. Texas Department of Health, Bureau of Vital Statistics. 2000 Annual Report, Mortality. Available at: <<http://www.tdh.state.tx.us/bvs/stats00/contents.htm#death>>. Accessed June 6, 2002.
31. Anderson RN. Deaths: Leading Causes for 1999. *National Vital Statistics Report*, 2001 Oct 12;49(11):1. Available at: <http://www.cdc.gov/nchs/data/nvsr/nvsr49/nvsr49_11.pdf>. Accessed April 1, 2002.
32. Texas Department of Health, Bureau of Vital Statistics. 2000 Annual Report, Mortality. Available at: <<http://www.tdh.state.tx.us/bvs/stats00/contents.htm#death>>. Accessed June 6, 2002.
33. Anderson RN. Deaths: Leading Causes for 1999. *National Vital Statistics Report*, 2001 Oct 12;49(11):1. Available at: <http://www.cdc.gov/nchs/data/nvsr/nvsr49/nvsr49_11.pdf>. Accessed April 1, 2002.
34. Texas Department of Health, Bureau of Vital Statistics. 2000 Annual Report, Mortality. Available at: <<http://www.tdh.state.tx.us/bvs/stats00/contents.htm#death>>. Accessed June 6, 2002.
35. Anderson RN. Deaths: Leading Causes for 1999. *National Vital Statistics Report*, 2001 Oct 12;49(11):1. Available at: <http://www.cdc.gov/nchs/data/nvsr/nvsr49/nvsr49_11.pdf>. Accessed April 1, 2002.



Chapter 3: Behavioral Health Risks

1. McGinnis JM, Foege WH. Actual Causes of Death in the United States. *JAMA* 1993;270(18):2207–12.
2. Nelson, D et al. State Trends in Health Risk Factors and Receipt of Clinical Preventive Services Among US Adults During the 1990. *JAMA* 2002;287(20):2659.
3. Texas Department of Health, Bureau of Disease and Injury Prevention. *Chronic Disease in Texas: A Surveillance Report of Disease Indicators*. 1st ed. Available at: <<http://www.tdh.state.tx.us/wellness/stats/dipbwrpt.pdf>>. Accessed March 29, 2002.
4. Centers for Disease Control and Prevention. *Exposure to Second-Hand Smoke Widespread*. April 1996. Available at: <<http://www.cdc.gov/od/oc/media/pressrel/second1.htm>>. Accessed April 1, 2002.
Pirkle J et al. Exposure of the US Population to Environmental Tobacco Smoke. *JAMA* 1996;275(16):1233–40.
5. Leading Health Indicators. In: US Department of Health and Human Services. *Healthy People 2010: Understanding and Improving Health*. Vol. 1, 2nd ed. Boston: Jones and Bartlett. 2000:31. Available at: <<http://www.health.gov/healthypeople/Document/tableofcontents.htm#volume1>>. Accessed April 12, 2002.
6. Texas Department of Health, Texas Behavioral Risk Factor Surveillance System, 2000.
7. Texas Department of Health, Bureau of Chronic Disease and Tobacco Prevention. Results of 2001 Texas Youth Tobacco Survey. In preparation.
8. Centers for Disease Control and Prevention. CDC. Surveillance Summaries, November 2, 2001. *MMWR* 2001;50(No.SS-4). Available at: <<http://www.cdc.gov/mmwr/preview/mmwrhtml/ss5004a1.htm>>. Accessed June 17, 2002.
9. Centers for Disease Control and Prevention. Annual Smoking-Attributable Mortality, Years of Potential Life Lost and Economic Costs — United States, 1995–1999. *MMWR* April 12, 2002. 51(14):300–3. Available at: <<http://www.cdc.gov/mmwr/preview/mmwrhtml/mm5114a2.htm>>. Accessed June 3, 2002.
Texas Department of Health, Bureau of Chronic Disease and Tobacco Prevention.
Centers for Disease Control and Prevention. *Tobacco Control State Highlights 2002: Impact and Opportunity*. Atlanta: National Center for Chronic Disease Prevention and Health Promotion, Office on Smoking and Health, 2002. Available at: <http://www.cdc.gov/tobacco/statehi/statehi_2002.htm>. Accessed June 3, 2002.
10. National Institute of Diabetes, & Digestive & Kidney Diseases. *Statistics Related to Overweight and Obesity*. Available at: <<http://www.niddk.nih.gov/health/nutrit/pubs/statobes.htm>>. Accessed April 1, 2002.
McGinnis JM, Foege WH. Actual Causes of Death in the United States. *JAMA* 1993 270(18)2207–12.
11. Centers for Disease Control and Prevention. *Obesity Epidemic Increases Dramatically in the United States*. Available at: <<http://www.cdc.gov/nccdphp/dnpa/obesity-epidemic.htm>>. Accessed July 18, 2002.



12. National Heart, Lung, and Blood Institute. *Clinical Guidelines on the Identification, Evaluation, and Treatment of Overweight and Obesity in Adults*. Available at: <http://www.nhlbi.nih.gov/guidelines/obesity/ob_home.htm>. Accessed June 3, 2002.
13. Texas Department of Health, Texas Behavioral Risk Factor Surveillance System, 2000.
14. Texas Department of Health, Bureau of Chronic Disease and Tobacco Prevention, data from *2001 Texas Youth Risk Behavior Survey*.
15. Texas Department of Health, Bureau of Chronic Disease and Tobacco Prevention, data from *2001 Texas Youth Risk Behavior Survey*.
16. Pending publication. Surveillance project conducted by UT Health Science Center–Houston School of Public Health, supported by Texas Department of Health Innovation Grant funding, 2001.
17. The President’s Council on Physical Fitness and Sports. *Physical Activity and Health: A Report of the Surgeon General*. 1996. Available at: <<http://www.cdc.gov/nccdphp/sgr/sgr.htm>>. Accessed June 3, 2002.
18. Centers for Disease Control and Prevention, National Center for Chronic Disease Prevention and Health Promotion. *Preventing Heart Disease and Stroke: Addressing the Nation’s Leading Killers At a Glance 2002*. Available at: <<http://www.cdc.gov/nccdphp/cvd/cvdaag.htm>>. Accessed April 1, 2002.
19. US Department of Agriculture. Nutrition and Your Health, Dietary Guidelines for Americans. 5th ed. 2000:Box 5. *Home and Garden Bulletin* No. 232. Available at: <http://www.health.gov/dietaryguidelines/dga2000/document/aim.htm#physical_top>. Accessed April 1, 2002. The President’s Council on Physical Fitness and Sports. *Physical Activity and Health: A Report of the Surgeon General*. 1996. Available at: <<http://www.cdc.gov/nccdphp/sgr/sgr.htm>>. Accessed June 3, 2002.
20. Physical activity trends — United States, 1990–1998. *MMWR* 2001 Mar 9;50(9):166–69. Available at: <<http://www.cdc.gov/mmwr/preview/mmwrhtml/mm5009a3.htm>>. Accessed April 1, 2002.
21. Texas Department of Health. Bureau of Chronic Disease and Tobacco Prevention. Results of the *2001 Texas Youth Risk Behavior Survey*. In preparation.
22. National Institute on Alcohol Abuse and Alcoholism. *10th Special Report to the U S Congress on Alcohol and Health*. 2000. Available at: <<http://www.niaaa.nih.gov/publications/10report/intro.pdf>>. Accessed April 1, 2002.
23. Minnesota Department of Health. *Alcohol, Tobacco and Other Drugs*, i. Available at: <<http://www.health.state.mn.us/divs/chs/phs/alcohol.pdf>>. Accessed May 20, 2002.
24. National Institute on Alcohol Abuse and Alcoholism. *10th Special Report to the U S Congress on Alcohol and Health*. 2000. Available at: <<http://www.niaaa.nih.gov/publications/10report/intro.pdf>>. Accessed April 1, 2002.
25. Texas Department of Health, Bureau of Chronic Disease and Tobacco Prevention, data from *2001 Texas Youth Risk Behavior Survey*.
26. Leading Health Indicators. In: US Department of Health and Human Services. *Healthy People 2010: Understanding and Improving Health*. Vol. 1, 2nd ed. Boston: Jones and Bartlett. 2000. Available at: <http://www.health.gov/healthypeople/Document/html/uih/uih_bw/uih_4.htm#subsabuse>. Accessed June 17, 2002



27. Wallisch LS. *2000 Texas Survey of Substance Use Among Adults*, Austin: Texas Commission on Alcohol and Drug Abuse. July 2001. Available at: <<http://www.tcada.state.tx.us/research/AdultHousehold.pdf>>. Accessed April 13, 2002.
28. Wallisch LS. *2000 Texas Survey of Substance Use Among Adults*. Austin: Texas Commission on Alcohol and Drug Abuse. July 2001. Available at: <<http://www.tcada.state.tx.us/research/AdultHousehold.pdf>>. Accessed April 13, 2002.
29. Substance Abuse and Mental Health Services Administration, Office of Applied Studies. *National Household Survey on Drug Abuse. 2000*. Available at: <<http://www.samhsa.gov/oas/p0000016.htm#standard>>. Accessed April 13, 2002.
30. Texas Department of Health, Bureau of Chronic Disease and Tobacco Prevention, *2001 Texas Youth Risk Behavior Survey, Summary Findings*. In preparation.
31. US Department of Health and Human Services. *Healthy People 2010* (conference edition, in two volumes). Washington, DC: January 2000:1–15.
32. National Center for Chronic Disease Prevention and Health Promotion. Chronic Diseases and Their Risk Factors: *The Nation's Leading Causes of Death*. Centers for Disease Control and Prevention. 1999:vii. Available at: <<http://www.cdc.gov/nccdphp/statbook/pdf/cdrf1999.pdf>>. Accessed April 1, 2002.
33. Anda RF. Elevated Blood Cholesterol. In: Brownson RC, Remington PL, Davis JR. *Chronic Disease Epidemiology and Control*. Washington, DC: American Public Health Association; 1993:123.
34. Labarthe DR, Rocella EJ. High Blood Pressure. In: Brownson RC, Remington PL, Davis JR. *Chronic Disease Epidemiology and Control*. Washington, DC: American Public Health Association; 1993:109–121.
35. National Center for Chronic Disease Prevention and Health Promotion. *The National Breast and Cervical Cancer Early Detection Program At-A-Glance 2001*. Available at: <<http://www.cdc.gov/cancer/nbccedp/about.htm>>. Accessed April 1, 2002.
36. Texas Department of Health, Bureau of Vital Statistics. *Table 20B — Deaths from Selected Causes — 2000 Texas Residents by Race/Ethnicity, Sex and Age*. Available at: <http://www.tdh.state.tx.us/bvs/stats00/annr_hm/00t20b.htm#FLU>. Accessed May 20, 2002.
37. Catania JA, et al. National trends in condom use among at-risk heterosexuals in the United States. *Journal of Acquired Immune Deficiency Syndromes* 2001 Jun 1;27(2):176–82.
38. Texas Department of Health, Bureau of Chronic Disease and Tobacco Prevention, data from *2001 Texas Youth Risk Behavior Survey*.



Chapter 4: Chronic Diseases

1. Bureau of Disease and Injury Prevention. *Chronic Disease in Texas: A Surveillance Report of Disease Indicators*. Austin: Texas Department of Health. 1999. Available at: <<http://www.tdh.state.tx.us/bdip/dipbwrpt.pdf>>. Accessed April 10, 2002.
2. The Office of Policy, Planning, and Evaluation. Chronic Diseases. In *Looking Toward 2000 — State Health Assessment*. Connecticut Department of Public Health, 1999. Available at: <http://www.dph.state.ct.us/OPPE/sha99/chronic_diseases.htm>. Accessed April 10, 2002.
3. Texas Department of Health, Bureau of Vital Statistics. *Summary of Vital Statistics for Texas 2000*. Available at: <http://www.tdh.state.tx.us/bvs/stats00/annr_hm/00summ.htm>. Accessed April 5, 2002.
4. National Center for Chronic Disease Prevention and Health Promotion. *Chronic Diseases and Their Risk Factors: The Nation's Leading Causes of Death*. Centers for Disease Control and Prevention. 1999:vii. Available at: <<http://www.cdc.gov/nccdphp/statbook/pdf/cdrf1999.pdf>>. Accessed April 1, 2002.
5. National Center for Chronic Disease Prevention and Health Promotion. *Chronic Diseases and Their Risk Factors: The Nation's Leading Causes of Death*. Centers for Disease Control and Prevention. 1999:vii. Available at: <<http://www.cdc.gov/nccdphp/statbook/pdf/cdrf1999.pdf>>. Accessed April 1, 2002.
6. Texas Department of Health, Texas Diabetes Council, Behavioral Risk Factor Surveillance System. *Diabetes in Texas: A Risk Factor Report*. June 2001. Publication No. 16-11164.
7. National Center for Chronic Disease Prevention and Health Promotion. *Chronic Diseases and Their Risk Factors: The Nation's Leading Causes of Death*. Centers for Disease Control and Prevention. 1999:vii. Available at: <<http://www.cdc.gov/nccdphp/statbook/pdf/cdrf1999.pdf>>. Accessed April 1, 2002.
8. National Center for Chronic Disease Prevention and Health Promotion. *The Burden of Chronic Diseases and Their Risk Factors*. Available at: <http://www.cdc.gov/nccdphp/burdenbook2002/02_heart.htm>. Accessed April 10, 2002.
9. Texas Department of Health, Bureau of Vital Statistics. *Table 20B — Deaths from Selected Causes — 2000 Texas Residents by Race/Ethnicity, Sex and Age*. Available at: <http://www.tdh.state.tx.us/bvs/stats00/annr_hm/00t20b.htm#CARDIO>. Accessed May 20, 2002.
10. American Heart Association. *2002 Heart and Stroke Statistical Update*. Available at: <<http://www.americanheart.org/presenter.jhtml?identifier=3000090>>. Accessed May 20, 2002.
11. Texas Department of Health, Bureau of Chronic Disease and Tobacco Prevention.
12. Texas Department of Health, Bureau of Chronic Disease and Tobacco Prevention.



13. Texas Department of Health, Bureau of Chronic Disease and Tobacco Prevention.
14. American Heart Association. *2002 Heart and Stroke Statistical Update*. Available at: <<http://www.americanheart.org/presenter.jhtml?identifier=3000090>>. Accessed June 17, 2002.
15. American Cancer Society. *Cancer Facts and Figures 2002*. Available at: <http://www.cancer.org/eprise/main/docroot/stt/stt_0>. Accessed April 10, 2002.
16. American Cancer Society. *Cancer Prevention and Early Detection Facts and Figures 2002*. Available at: <http://www.cancer.org/eprise/main/docroot/stt/stt_0>. Accessed April 10, 2002.
17. American Cancer Society. *Cancer Prevention and Early Detection Facts and Figures 2002:4*. Available at: <http://www.cancer.org/eprise/main/docroot/stt/stt_0>. Accessed April 10, 2002.
18. American Cancer Society. *Cancer Facts and Figures 2002:1*. Available at: <http://www.cancer.org/eprise/main/docroot/stt/stt_0>. Accessed April 10, 2002.
Texas Department of Health, Cancer Registry Division, *Texas Cancer Mortality, 2000* (April 2002 draft).
19. American Cancer Society. *Cancer Prevention and Early Detection Facts and Figures 2002:4*. Available at: <http://www.cancer.org/eprise/main/docroot/stt/stt_0>. Accessed April 10, 2002.
20. American Cancer Society. *Cancer Facts and Figures 2002:1*. Available at: <http://www.cancer.org/eprise/main/docroot/stt/stt_0>. Accessed April 10, 2002.
21. Texas Department of Health, Cancer Registry Division, *Texas Cancer Mortality, 2000* (April 2002 draft) for all Texas cancer incidence data below.
22. Howe HL, et al. Annual Report to the Nation on the Status of Cancer, 1973–1998, Featuring Cancers with Recent Increasing Trends. *Journal of the National Cancer Institute* 2001 Jun 6;93(11):824–42. A synopsis of the article can be found at: <<http://newscenter.cancer.gov/pressreleases/reportnation.html>>. Accessed July 1, 2002.
23. Texas Department of Health, Cancer Registry Division, *Texas Cancer Mortality, 2000* (April 2002 draft).
24. Texas Department of Health, Bureau of Vital Statistics. *2000 Annual Report. Tables. Deaths*. Available at: <<http://www.tdh.state.tx.us/bvs/stats00/contents.htm#death>>. Accessed April 10, 2002.
25. American Cancer Society. *Cancer Facts and Figures 2002:1*. Available at: <http://www.cancer.org/eprise/main/docroot/stt/stt_0>. Accessed April 10, 2002.
Texas Department of Health, Cancer Registry Division, *Texas Cancer Mortality, 2000* (April 2002 draft).
26. Texas Department of Health, Bureau of Chronic Disease and Tobacco Prevention.
27. Anderson RN. Deaths: Leading Causes for 1999. *National Vital Statistics Report*, 2001 Oct 12;49(11). Available at: <http://www.cdc.gov/nchs/data/nvsr/nvsr49/nvsr49_11.pdf>. Accessed April 1, 2002.
28. Howe HL, et al. Annual Report to the Nation on the Status of Cancer, 1973–1998, Featuring Cancers with Recent Increasing Trends. *Journal of the National Cancer Institute* 2001 Jun 6;93(11):824–42. A synopsis of the article can be found at: <<http://newscenter.cancer.gov/pressreleases/reportnation.html>>. Accessed July 1, 2002.
29. Texas Department of Health, Bureau of Vital Statistics. *2000 Annual Report. Tables. Deaths*. Available at: <<http://www.tdh.state.tx.us/bvs/stats00/contents.htm#death>>. Accessed April 10, 2002.



30. Texas Department of Health, Bureau of Chronic Disease and Tobacco Prevention.
31. Texas Department of Health, Cancer Registry Division, *Texas Cancer Mortality, 2000* (April 2002 draft).
32. Texas Department of Health, Bureau of Chronic Disease and Tobacco Prevention.
33. Texas Department of Health, Cancer Registry Division, *Texas Cancer Mortality, 2000* (April 2002 draft).
34. Texas Department of Health, Cancer Registry Division, *Texas Cancer Mortality, 2000* (April 2002 draft).
35. Texas Department of Health, Cancer Registry Division, *Texas Cancer Mortality, 2000* (April 2002 draft).
36. Texas Department of Health, Bureau of Vital Statistics. *2000 Annual Report. Tables. Deaths*. Available at: <<http://www.tdh.state.tx.us/bvs/stats00/contents.htm#death>>. Accessed April 10, 2002.
37. Minino AM, Smith BL. Deaths: Preliminary Data for 2000. *National Vital Statistics Report*, 2001 Oct 9;49(12):25-26. Available at: <http://www.cdc.gov/nchs/data/nvsr/nvsr49/nvsr49_12.pdf>. Accessed April 10, 2002.
38. Comprehensive Cancer Control Program. *The Cost of Cancer in Texas*. 2nd ed. December 2001. Available at: <<http://www.tdh.state.tx.us/tcccp/costrep/seconded.pdf>>. Accessed April 8, 2002.
39. American Cancer Society. *Costs of Cancer*. 2001. Available at: <http://www.cancer.org/eprise/main/docroot/MIT/content/MIT_3_2X_Costs_of_Cancer>. Accessed May 20, 2002.
40. National Center for Chronic Disease Prevention and Health Promotion. *The Burden of Chronic Diseases and Their Risk Factors*. Available at: <http://www.cdc.gov/nccdphp/burdenbook2002/02_stroke.htm>. Accessed April 10, 2002.
41. Texas Department of Health, Bureau of Vital Statistics. *2000 Annual Report. Tables. Deaths*. Available at: <<http://www.tdh.state.tx.us/bvs/stats00/contents.htm#death>>. Accessed April 10, 2002.
42. Anderson RN. Deaths: Leading Causes for 1999. *National Vital Statistics Report*, 2001 Oct 12;49(11). Available at: <http://www.cdc.gov/nchs/data/nvsr/nvsr49/nvsr49_11.pdf>. Accessed April 1, 2002.
43. American Heart Association. *2002 Heart and Stroke Statistical Update*. Available at: <<http://www.american-heart.org/presenter.jhtml?identifier=3000090>>. Accessed May 20, 2002.
44. Texas Department of Health, Bureau of Vital Statistics. *2000 Annual Report. Tables. Deaths*. Available at: <<http://www.tdh.state.tx.us/bvs/stats00/contents.htm#death>>. Accessed April 10, 2002.
45. Anderson RN. Deaths: Leading Causes for 1999. *National Vital Statistics Report*, 2001 Oct 12;49(11):10–11. Available at: <http://www.cdc.gov/nchs/data/nvsr/nvsr49/nvsr49_11.pdf>. Accessed April 10, 2002.
46. Texas Department of Health, Bureau of Chronic Disease and Tobacco Prevention.
47. Texas Department of Health, Bureau of Chronic Disease and Tobacco Prevention.



48. Minino AM, Smith BL. Deaths: Preliminary Data for 2000. *National Vital Statistics Report*, 2001 Oct 9;49(12):25–26. Available at: <http://www.cdc.gov/nchs/data/nvsr/nvsr49/nvsr49_12.pdf>. Accessed April 4, 2002.
49. National Stroke Association. *Effects of Stroke*. Available at: <http://www.stroke.org/effects_stroke.cfm>. Accessed April 10, 2002.
50. Henkel J. New Success Against Strokes. *FDA Consumer*. March/April 1998:12–16. Available at: <http://www.fda.gov/fdac/features/1998/298_stroke.html>. Accessed April 10, 2002.
51. National Center for Environmental Health. *Asthma At A Glance, 1999*. Available at: <http://www.cdc.gov/nceh/asthma_old/ataglance/default.htm>. Accessed April 11, 2002.
52. National Center for Environmental Health. *CDC's Asthma Prevention Program*. Available at: <http://www.cdc.gov/nceh/asthma_old/factsheets/asthma.htm>. Accessed April 11, 2002.
53. American Lung Association. *Asthma Facts*. Available at: <http://www.texaslung.org/FactSheets/asthma_facts.htm>. Accessed April 11, 2002.
54. American Lung Association. *Asthma Facts*. Available at: <http://www.texaslung.org/FactSheets/asthma_facts.htm>. Accessed April 11, 2002.
55. National Institutes of Health. NHLBI Reports New Asthma Data for World Asthma Day 2001, *NIH News Release*, May 3, 2001. Available at: <<http://www.nih.gov/news/pr/may2001/nhlbi-03.htm>>. Accessed April 11, 2002.
56. American Lung Association. *Asthma Facts*. Available at: <http://www.texaslung.org/FactSheets/asthma_facts.htm>. Accessed April 11, 2002.
57. National Center for Chronic Disease Prevention and Health Promotion. *The Burden of Chronic Diseases and Their Risk Factors*. Available at: <http://www.cdc.gov/nccdphp/burdenbook2002/02_diabetes.htm>. Accessed April 10, 2002.
58. Texas Department of Health, Texas Diabetes Council, Behavioral Risk Factor Surveillance System. *Diabetes in Texas: A Risk Factor Report*. June 2001. Publication No. 16-11164.
59. Texas Department of Health, Bureau of Vital Statistics. *2000 Annual Report. Tables. Deaths*. Available at: <<http://www.tdh.state.tx.us/bvs/stats00/contents.htm#death>>. Accessed April 10, 2002.
60. Anderson RN. Deaths: Leading Causes for 1999. *National Vital Statistics Report*, 2001 Oct 12;49(11). Available at: <http://www.cdc.gov/nchs/data/nvsr/nvsr49/nvsr49_11.pdf>. Accessed April 1, 2002.
61. National Center for Health Statistics. *Health, United States, 2001*. Hyattsville, Maryland: Public Health Service. 2001:Table 30. Available at: <<http://www.cdc.gov/nchs/products/pubs/pubd/hus/tables/2001/01hus030.pdf>>. Accessed April 4, 2002.
62. Texas Department of Health, Bureau of Chronic Disease and Tobacco Prevention.
63. Texas Department of Health, Bureau of Chronic Disease and Tobacco Prevention.
64. Texas Department of Health, Bureau of Chronic Disease and Tobacco Prevention.



65. Texas Diabetes Council. *Type II Diabetes in Children and Adolescents Statewide Action Plan*. Available at: <<http://www.tdh.state.tx.us/diabetes/t2child/Statewide%20Action1.pdf>>. Accessed April 11, 2002.
66. Sinha R, Fisch G, Teague B. et al. Prevalence of Impaired Glucose Tolerance Among Children and Adolescents with Marked Obesity. *New England Journal of Medicine* 2002 Mar 14;346:802–10.
67. *Health Disparities in Texas: An Epidemiologic Review of Priority Health Outcomes*. Austin: Texas Department of Health. March 2002:33.
68. Mokdad AH, Bowman BA, Ford ES, Vinicor F, Marks JS, Koplan JP. The continuing epidemics of obesity and diabetes in the United States. *JAMA*. 2001 Sep 12;286(10):1195–200. A synopsis of the article is available at: <<http://www.cdc.gov/od/oc/media/pressrel/r010911.htm>>. Accessed April 11, 2002.
69. Texas State Data Center. Data for 2010 are based on migration growth scenario 0.5 projections. December 2001.
70. Texas Council on Alzheimer’s Disease and Related Disorders. *Biennial Report 2000*. Available at: <<http://www.tdh.state.tx.us/osp/biennial.pdf>>. Accessed April 11, 2002.
71. National Institutes of Health Osteoporosis and Related Bone Diseases — National Resource Center. *Osteoporosis and African-American Women*. Available at: <<http://www.osteoporosis.org/docs/67.821142333.html>>. Accessed April 11, 2002.
72. Texas Department of Health, Osteoporosis. *Fast Facts about Osteoporosis*. Available at: <<http://www.tdh.state.tx.us/osteoporosis/fastfacts.htm>>. Accessed April 11, 2002.
73. Texas Department of Health, Osteoporosis. *Fast Facts about Osteoporosis*. Available at: <<http://www.tdh.state.tx.us/osteoporosis/fastfacts.htm>>. Accessed April 11, 2002.
74. National Institutes of Health Osteoporosis and Related Bone Diseases — National Resource Center. *Fast Facts on Osteoporosis*. Available at: <<http://www.osteoporosis.org/osteofastfact.html>>. Accessed April 11, 2002.
75. National Osteoporosis Foundation. *Disease Statistics*. Available at: <<http://www.nof.org/osteoporosis/stats.htm>>. Accessed April 11, 2002.
76. National Osteoporosis Foundation. *Disease Statistics*. Available at: <<http://www.nof.org/osteoporosis/stats.htm>>. Accessed April 11, 2002.
77. Institute of Medicine. *Health and Behavior: The Interplay of Biological, Behavioral, and Societal Influences*. Washington, DC: National Academy Press; 2001:101.
78. National Institutes of Health Osteoporosis and Related Bone Diseases — National Resource Center. *Fast Facts on Osteoporosis*. Available at: <<http://www.osteoporosis.org/osteofastfact.html>>. Accessed April 11, 2002.
79. Texas Department of Health, Osteoporosis. *Fast Facts about Osteoporosis*. Available at: <<http://www.tdh.state.tx.us/osteoporosis/fastfacts.htm>>. Accessed March 19, 2002.
80. Unpublished report, Burge RT et al, *The Cost of Osteoporosis in Texas: Projections for 2000–2005*, Procter and Gamble Pharmaceuticals, 2001.



81. National Center for Chronic Disease Prevention and Health Promotion. Arthritis Now a Public Health Priority. *Chronic Disease Notes & Reports*; 1999 Fall;12(3). Available at: <<http://www.cdc.gov/nccdphp/cdnr.htm>>. Accessed April 11, 2002.
82. Arthritis Foundation. *What Are the Risks?* 2002. Available at: <<http://www.arthritis.org/conditions/jointhealth/risks.asp>>. Accessed April 11, 2002.
83. Texas Department of Health. *Texas Risk Factor Report, Arthritis 1999 Survey Data*. Available at: <<http://www.tdh.state.tx.us/chronicd/arth2000.pdf>>. Accessed April 11, 2002.
84. Centers for Disease Control and Prevention. *Targeting Arthritis: Public Health Takes Action 2002*.
85. National Center for Chronic Disease Prevention and Health Promotion. *Arthritis*. Available at: <<http://www.cdc.gov/nccdphp/arthritis/index.htm>>. Accessed April 11, 2002.
86. Adams PF, Hendershot GE, Marano MA. Current estimates from the National Health Interview Survey, 1996. National Center for Health Statistics. *Vital Health Stat.* 1999;Series 10(200):93, table 62. Available at: <http://www.cdc.gov/nchs/data/series/sr_10/sr10_200.pdf>. Accessed April 11, 2002.
87. Adams PF, Hendershot GE, Marano MA. Current estimates from the National Health Interview Survey, 1996. National Center for Health Statistics. *Vital Health Stat.* 1999;Series 10(200):93, table 62. Available at: <http://www.cdc.gov/nchs/data/series/sr_10/sr10_200.pdf>. Accessed April 11, 2002.
88. National Center for Chronic Disease Prevention and Health Promotion. Arthritis Now a Public Health Priority. *Chronic Disease Notes & Reports*; 1999 Fall;12(3). Available at: <<http://www.cdc.gov/nccdphp/cdnr.htm>>. Accessed April 11, 2002.
89. McDowell I. Alzheimer's Disease: Insights from Epidemiology. *Aging*. 2001 Jun; 13(3):143–62.
90. Texas Department of Health Alzheimer's Program. *Alzheimer's Disease Statistics*. Available at: <http://www.tdh.state.tx.us/osp/a_stats.htm>. Accessed April 11, 2002.
91. Texas Department of Health Alzheimer's Program. *Alzheimer's Disease Statistics*. Available at: <http://www.tdh.state.tx.us/osp/a_stats.htm>. Accessed April 11, 2002.
92. Texas Department of Health, Bureau of Vital Statistics. *2000 Annual Report. Tables. Deaths*. Available at: <<http://www.tdh.state.tx.us/bvs/stats00/contents.htm#death>>. Accessed April 10, 2002.
93. Anderson RN. Deaths: Leading Causes for 1999. *National Vital Statistics Report*, 2001 Oct 12;49(11). Available at: <http://www.cdc.gov/nchs/data/nvsr/nvsr49/nvsr49_11.pdf>. Accessed April 1, 2002.
94. Texas Department of Health, Bureau of Vital Statistics. *2000 Annual Report. Tables. Deaths*. Available at: <<http://www.tdh.state.tx.us/bvs/stats00/contents.htm#death>>. Accessed April 10, 2002.
95. Anderson RN. Deaths: Leading Causes for 1999. *National Vital Statistics Report*, 2001 Oct 12;49(11). Available at: <http://www.cdc.gov/nchs/data/nvsr/nvsr49/nvsr49_11.pdf>. Accessed April 1, 2002.
96. Texas Department of Health, Bureau of Vital Statistics. *2000 Annual Report. Tables. Deaths*. Available at: <<http://www.tdh.state.tx.us/bvs/stats00/contents.htm#death>>. Accessed April 10, 2002.
97. Texas Department of Health, Bureau of Vital Statistics. *2000 Annual Report. Tables. Deaths*. Available at: <<http://www.tdh.state.tx.us/bvs/stats00/contents.htm#death>>. Accessed April 10, 2002.



98. Anderson RN. Deaths: Leading Causes for 1999. *National Vital Statistics Report*, 2001 Oct 12;49(11). Available at: <http://www.cdc.gov/nchs/data/nvsr/nvsr49/nvsr49_11.pdf>. Accessed April 1, 2002.
99. Elaine Braslow, Texas Department of Health, Bureau of Chronic Disease and Tobacco Prevention, personal communication, May 22, 2002.
100. Texas Department of Health Alzheimer's Program. *Alzheimer's Disease Statistics*. Available at: <http://www.tdh.state.tx.us/osp/a_stats.htm>. Accessed April 11, 2002.
101. Texas Council on Alzheimer's Disease and Related Disorders. *Biennial Report 2000*. Available at: <<http://www.tdh.state.tx.us/osp/biennial.pdf>>. Accessed April 11, 2002.
102. Texas Council on Alzheimer's Disease and Related Disorders . *Biennial Report 2000*. Available at: <<http://www.tdh.state.tx.us/osp/biennial.pdf>>. Accessed April 11, 2002.
103. Texas Council on Alzheimer's Disease and Related Disorders. *Biennial Report 2000*. Available at: <<http://www.tdh.state.tx.us/osp/biennial.pdf>>. Accessed April 11, 2002.



Chapter 5: Infectious Diseases

1. *The Hidden Epidemic: Confronting Sexually Transmitted Disease. Summary.* Washington, DC: Institute of Medicine, National Academy Press: 1997: 1.
2. Texas Department of Health, Association for Disease Control and Prevention. *Epidemiology Annual Report Online, 1999.* Available at: <<http://www.tdh.state.tx.us/epidemiology/99annual/frames/frames.htm>>. Accessed April 19, 2002.
3. Texas Department of Health, Bureau of HIV and STD Prevention surveillance data from Ed Weckerly, personal communication, May 17, 2002.
4. National Institute of Allergy and Infectious Disease, *HIV/AIDS Statistics*, February 2002. Available at: <<http://www.niaid.nih.gov/factsheets/aidsstat.htm>>. Accessed April 19, 2002.
5. National Center for HIV, STD and TB Prevention, *HIV/AIDS Surveillance Report, 2000*;12(2):Table 7. Available at: <<http://www.cdc.gov/hiv/stats/hasr1202.htm>>. Accessed April 19, 2002.
6. Texas Department of Health, Bureau of HIV and STD Prevention surveillance data from Ed Weckerly, personal communication, May 17, 2002.
7. National Institute of Allergy and Infectious Disease, *HIV/AIDS Statistics*, February 2002. Available at: <<http://www.niaid.nih.gov/factsheets/aidsstat.htm>>. Accessed April 19, 2002.
8. National Institute of Allergy and Infectious Disease, *HIV/AIDS Statistics*, February 2002. Available at: <<http://www.niaid.nih.gov/factsheets/aidsstat.htm>>. Accessed April 19, 2002.
9. Texas Department of Health, Bureau of HIV and STD Prevention surveillance data from Ed Weckerly, personal communication, May 17, 2002.
10. Texas Department of Health, Bureau of HIV and STD Prevention surveillance data from Ed Weckerly, personal communication, May 17, 2002.
11. Texas Department of Health, Bureau of HIV and STD Prevention surveillance data from Ed Weckerly, personal communication, May 17, 2002.
12. National Center for HIV, STD and TB Prevention, *HIV/AIDS Surveillance Report, 2001*;13(1). Available at: <<http://www.cdc.gov/hiv/stats/hasr1301.htm>>. Accessed April 19, 2002.
13. Texas Department of Health, Bureau of HIV and STD Prevention surveillance data from Ed Weckerly, personal communication, May 17, 2002.
14. Texas Department of Health, Bureau of HIV and STD Prevention surveillance data from Ed Weckerly, personal communication, May 17, 2002.



15. National Center for HIV, STD and TB Prevention, *HIV/AIDS Surveillance Report*, 2000;12(2): Table 7. Available at: <<http://www.cdc.gov/hiv/stats/hasr1202.htm>>. Accessed April 19, 2002.
16. National Institute of Allergy and Infectious Disease, *HIV/AIDS Statistics*, February 2002. Available at: <<http://www.niaid.nih.gov/factsheets/aidsstat.htm>>. Accessed April 19, 2002.
17. Texas Department of Health, Bureau of HIV and STD Prevention surveillance data from Ed Weckerly, personal communication, May 17, 2002.
18. National Institute of Allergy and Infectious Disease, *HIV/AIDS Statistics*, February 2002. Available at: <<http://www.niaid.nih.gov/factsheets/aidsstat.htm>>. Accessed April 19, 2002.
19. National Institute of Allergy and Infectious Disease, *HIV/AIDS Statistics*, February 2002. Available at: <<http://www.niaid.nih.gov/factsheets/aidsstat.htm>>. Accessed April 19, 2002.
20. Texas Department of Health, Bureau of HIV and STD Prevention surveillance data from Ed Weckerly, personal communication, May 17, 2002.
21. Texas Department of Health, Bureau of HIV and STD Prevention surveillance data from Ed Weckerly, personal communication, May 17, 2002.
22. National Institute of Allergy and Infectious Disease, *HIV/AIDS Statistics*, February 2002. Available at: <<http://www.niaid.nih.gov/factsheets/aidsstat.htm>>. Accessed April 19, 2002.
23. National Institute of Allergy and Infectious Disease, *HIV/AIDS Statistics*, February 2002. Available at: <<http://www.niaid.nih.gov/factsheets/aidsstat.htm>>. Accessed April 19, 2002.
24. Kaiser Family Foundation. *Sexually Transmitted Diseases in America: How Many Cases and at What Cost? Part 3*. Available at: <http://www.kff.org/content/archive/1445/std_rep3.html>. Accessed April 19, 2002.
25. Texas Department of Health, Bureau of HIV and STD Prevention, HIV Medications Program data from Ed Weckerly, personal communication, May 17, 2002.
26. Texas Department of Health, Associateship for Disease Control and Prevention. *Epidemiology Annual Report Online*, 1999. Available at: <<http://www.tdh.state.tx.us/epidemiology/99annual/frames/frames.htm>> Accessed April 19, 2002.
27. National Center for HIV, STD and TB Prevention. *Some Facts about Syphilis*. May 2001. Available at: <<http://www.cdc.gov/stopsyphilis/SyphilisFact.htm>>. Accessed April 19, 2002.
28. Texas Department of Health, Bureau of HIV and STD Prevention, STD surveillance data from Ed Weckerly, personal communication, May 17, 2002.
29. Texas Department of Health, Bureau of HIV and STD Prevention, STD surveillance data from Ed Weckerly, personal communication, May 17, 2002.
30. Texas Department of Health, Bureau of HIV and STD Prevention, STD surveillance data from Ed Weckerly, personal communication, May 17, 2002.



31. Centers for Disease Control and Prevention. *Tracking the Hidden Epidemics: Trends in STDs in the United States 2000*:14. Available at: <http://www.cdc.gov/nchstp/dstd/Stats_Trends/Trends2000.pdf>. Accessed April 19, 2002.
National Center for HIV, STD and TB Prevention. *Sexually Transmitted Disease Surveillance 2000*. Available at: <<http://www.cdc.gov/std/stats/TOC2000.htm>>. Accessed April 19, 2002.
32. Texas Department of Health, Bureau of HIV and STD Prevention, STD surveillance data from Ed Weckerly, personal communication, May 17, 2002.
33. National Center for HIV, STD and TB Prevention. *Sexually Transmitted Disease Surveillance 2000*. Available at: <<http://www.cdc.gov/std/stats/TOC2000.htm>>. Accessed April 19, 2002.
34. Texas Department of Health, Bureau of HIV and STD Prevention, STD surveillance data from Ed Weckerly, personal communication, May 17, 2002.
35. National Center for HIV, STD and TB Prevention. *Sexually Transmitted Disease Surveillance 2000*. Available at: <<http://www.cdc.gov/std/stats/TOC2000.htm>>. Accessed April 19, 2002.
36. Texas Department of Health, Bureau of HIV and STD Prevention, STD surveillance data from Ed Weckerly, personal communication, May 17, 2002.
37. National Center for HIV, STD and TB Prevention. *Sexually Transmitted Disease Surveillance 2000*. Available at: <<http://www.cdc.gov/std/stats/TOC2000.htm>>. Accessed April 19, 2002.
38. Kaiser Family Foundation. *Sexually Transmitted Diseases in America: How Many Cases and at What Cost? Part 3*: Table 3. Available at: <http://www.kff.org/content/archive/1445/std_rep3.html>. Accessed April 19, 2002.
39. *Control of Communicable Diseases Manual*. Washington, DC: American Public Health Association; 2000:97–98.
40. Texas Department of Health, HIV/STD Epidemiology Division. *Surveillance Branch Annual Report 2000: Texas HIV/STD Surveillance Report*. Available at: <<http://www.tdh.state.tx.us/hivstd/stats/pdf/Surv0012.pdf>>. Accessed April 19, 2002.
41. National Center for HIV, STD and TB Prevention. *Sexually Transmitted Disease Surveillance 2000*. Available at: <<http://www.cdc.gov/std/stats/TOC2000.htm>>. Accessed April 19, 2002.
42. Texas Department of Health, Bureau of HIV and STD Prevention, STD surveillance data from Ed Weckerly, personal communication, May 17, 2002.
43. Centers for Disease Control and Prevention. *Tracking the Hidden Epidemics: Trends in STDs in the United States 2000*:6. Available at: <http://www.cdc.gov/nchstp/dstd/Stats_Trends/Trends2000.pdf>. Accessed April 19, 2002.
44. Texas Department of Health, Bureau of HIV and STD Prevention, STD surveillance data from Ed Weckerly, personal communication, May 17, 2002.
45. National Center for HIV, STD and TB Prevention. *Sexually Transmitted Disease Surveillance 2000*. Available at: <<http://www.cdc.gov/std/stats/TOC2000.htm>>. Accessed April 19, 2002.
46. Ed Weckerly, Texas Department of Health, Bureau of HIV and STD Prevention, personal communication, May 17, 2002.



47. Texas Department of Health, Bureau of HIV and STD Prevention, STD surveillance data from Ed Weckerly, personal communication, May 17, 2002.
48. Centers for Disease Control and Prevention. *Tracking the Hidden Epidemics: Trends in STDs in the United States 2000:6*. Available at: <http://www.cdc.gov/nchstp/dstd/Stats_Trends/Trends2000.pdf>. Accessed April 19, 2002.
49. Texas Department of Health, Bureau of HIV and STD Prevention, STD surveillance data from Ed Weckerly, personal communication, May 17, 2002.
50. National Center for HIV, STD and TB Prevention. *Sexually Transmitted Disease Surveillance 2000*. Available at: <<http://www.cdc.gov/std/stats/TOC2000.htm>>. Accessed April 19, 2002.
51. Centers for Disease Control and Prevention. *Tracking the Hidden Epidemics: Trends in STDs in the United States 2000:6*. Available at: <http://www.cdc.gov/nchstp/dstd/Stats_Trends/Trends2000.pdf>. Accessed April 19, 2002.
52. Kaiser Family Foundation. *Sexually Transmitted Diseases in America: How Many Cases and at What Cost? Part 3: Table 3*. Available at: <http://www.kff.org/content/archive/1445/std_rep3.html>. Accessed April 19, 2002.
53. National Center for HIV, STD and TB Prevention. *Chlamydia in the United States*, April 2001, Available at: <http://www.cdc.gov/nchstp/dstd/Fact_Sheets/chlamydia_facts.htm>. Accessed April 19, 2002.
54. National Center for HIV, STD and TB Prevention. *Gonorrhea*. May 2001. Available at: <http://www.cdc.gov/nchstp/dstd/Fact_Sheets/FactsGonorrhea.htm>. Accessed April 22, 2002.
55. Ed Weckerly, Texas Department of Health, Bureau of HIV and STD Prevention, personal communication, May 17, 2002.
56. Ed Weckerly, Texas Department of Health, Bureau of HIV and STD Prevention, personal communication, May 17, 2002.
57. National Center for HIV, STD and TB Prevention. *Sexually Transmitted Disease Surveillance 2000*. Available at: <<http://www.cdc.gov/std/stats/TOC2000.htm>>. Accessed April 19, 2002.
58. Ed Weckerly, Texas Department of Health, Bureau of HIV and STD Prevention, personal communication, May 17, 2002.
59. Ed Weckerly, Texas Department of Health, Bureau of HIV and STD Prevention, personal communication, May 17, 2002.
60. National Center for HIV, STD and TB Prevention. *Sexually Transmitted Disease Surveillance 2000*. Available at: <<http://www.cdc.gov/std/stats/TOC2000.htm>>. Accessed April 19, 2002.
61. Ed Weckerly, Texas Department of Health, Bureau of HIV and STD Prevention, personal communication, May 17, 2002.
62. National Center for HIV, STD and TB Prevention. *Sexually Transmitted Disease Surveillance 2000*. Available at: <<http://www.cdc.gov/std/stats/TOC2000.htm>>. Accessed April 19, 2002.
63. Ed Weckerly, Texas Department of Health, Bureau of HIV and STD Prevention, personal communication, May 17, 2002.



64. Centers for Disease Control and Prevention. *Tracking the Hidden Epidemics: Trends in STDs in the United States 2000*:11. Available at: <http://www.cdc.gov/nchstp/dstd/Stats_Trends/Trends2000.pdf>. Accessed April 19, 2002.
65. National Institute of Allergy and Infectious Diseases. *Fact Sheet: Gonorrhea*. October 2000. Available at: <<http://www.niaid.nih.gov/factsheets/stdgon.htm>>. Accessed May 22, 2002.
66. Lisa Marengo, Texas Department of Health, Bureau of Communicable Disease Control, Infectious Disease Epidemiology and Surveillance Division, personal communication, May 22, 2002.
67. Texas Department of Health, Associateship for Disease Control and Prevention. *Epidemiology Annual Report Online, 1999*. Available at: <<http://www.tdh.state.tx.us/epidemiology/99annual/frames/frames.htm>>. Accessed April 19, 2002.
68. Texas Department of Health, Associateship for Disease Control and Prevention. *Epidemiology Annual Report Online, 1999*. Available at: <<http://www.tdh.state.tx.us/epidemiology/99annual/frames/frames.htm>>. Accessed April 19, 2002.
69. Texas Department of Health, Associateship for Disease Control and Prevention. *Epidemiology Annual Report Online, 1999*. Available at: <<http://www.tdh.state.tx.us/epidemiology/99annual/frames/frames.htm>>. Accessed April 19, 2002.
70. Summary of Notifiable Diseases, United States, 1999. *MMWR* 2001 April 6;48(53): Table 4. Available at: <<http://www.cdc.gov/mmwr/preview/mmwrhtml/mm4853a1.htm>>. Accessed April 22, 2002.
71. Prevention of Hepatitis A through Active or Passive Immunization: Recommendations of the Advisory Committee on Immunization Practices (ACIP). *MMWR* 1999 October 1;48(RR12):5. Available at: <<http://www.cdc.gov/mmwr/preview/mmwrhtml/rr4812a1.htm>>. Accessed April 22, 2002.
72. Texas Department of Health, Associateship for Disease Control and Prevention. *Epidemiology Annual Report Online, 1999*. Available at: <<http://www.tdh.state.tx.us/epidemiology/99annual/frames/frames.htm>>. Accessed April 19, 2002.
73. Linda Gaul, Texas Department of Health, Bureau of Communicable Disease, Infectious Disease Epidemiology and Surveillance Division, personal communication, May 16, 2002.
74. Summary of Notifiable Diseases, United States, 1999. *MMWR* 2001 April 6;48(53): Table 4. Available at: <<http://www.cdc.gov/mmwr/preview/mmwrhtml/mm4853a1.htm>>. Accessed April 22, 2002.
75. Linda Gaul, Texas Department of Health, Bureau of Communicable Disease, Infectious Disease Epidemiology and Surveillance Division, personal communication, May 16, 2002.
76. Summary of Notifiable Diseases, United States, 1999. *MMWR* 2001 April 6;48(53): Table 3. Available at: <<http://www.cdc.gov/mmwr/preview/mmwrhtml/mm4853a1.htm>>. Accessed April 22, 2002.
77. David Bastis, Texas Department of Health, Bureau of Immunization and Pharmacy Support, personal communication, May 22, 2002.
78. Prevention of Hepatitis A through Active or Passive Immunization: Recommendations of the Advisory Committee on Immunization Practices (ACIP). *MMWR* 1999 October 1;48(RR12):4. Available at: <<http://www.cdc.gov/mmwr/preview/mmwrhtml/rr4812a1.htm>>. Accessed April 22, 2002.



79. Texas Department of Health, Associateship for Disease Control and Prevention. *Epidemiology Annual Report Online, 1999*. Available at: <<http://www.tdh.state.tx.us/epidemiology/99annual/frames/frames.htm>> Accessed April 19, 2002.
80. Texas Department of Health, Associateship for Disease Control and Prevention. *Epidemiology Annual Report Online, 1999*. Available at: <<http://www.tdh.state.tx.us/epidemiology/99annual/frames/frames.htm>> Accessed April 19, 2002.
81. Texas Department of Health, Associateship for Disease Control and Prevention. *Epidemiology Annual Report Online, 1999*. Available at: <<http://www.tdh.state.tx.us/epidemiology/99annual/frames/frames.htm>> Accessed April 19, 2002.
82. Texas Department of Health, Associateship for Disease Control and Prevention. *Epidemiology Annual Report Online, 1999*. Available at: <<http://www.tdh.state.tx.us/epidemiology/99annual/frames/frames.htm>>. Accessed April 19, 2002.
83. Texas Department of Health, Associateship for Disease Control and Prevention. *Epidemiology in Texas Annual Reports*. Austin, Texas Department of Health. 1990–1999.
84. Centers for Disease Control and Prevention. *Tracking the Hidden Epidemics: Trends in STDs in the United States 2000:22*. Available at: <http://www.cdc.gov/nchstp/dstd/Stats_Trends/Trends2000.pdf>. Accessed April 19, 2002.
85. Summary of Notifiable Diseases, United States, 1999. *MMWR* 2001 April 6;48(53):1–104. Available at: <<http://www.cdc.gov/mmwr/preview/mmwrhtml/mm4853a1.htm>>. Accessed April 22, 2002.
86. Texas Department of Health, Associateship for Disease Control and Prevention. *Epidemiology Annual Report Online, 1999*. Available at: <<http://www.tdh.state.tx.us/epidemiology/99annual/frames/frames.htm>>. Accessed April 19, 2002.
87. Texas Department of Health, Associateship for Disease Control and Prevention. *Epidemiology Annual Report Online, 1999*. Available at: <<http://www.tdh.state.tx.us/epidemiology/99annual/frames/frames.htm>>. Accessed April 19, 2002.
88. Centers for Disease Control and Prevention. *Tracking the Hidden Epidemics: Trends in STDs in the United States 2000:22*. Available at: <http://www.cdc.gov/nchstp/dstd/Stats_Trends/Trends2000.pdf>. Accessed April 19, 2002.
89. Texas Department of Health, Associateship for Disease Control and Prevention. *Epidemiology Annual Report Online, 1999*. Available at: <<http://www.tdh.state.tx.us/epidemiology/99annual/frames/frames.htm>>. Accessed April 19, 2002.
90. Summary of Notifiable Diseases, United States, 1999. *MMWR* 2001 April 6;48(53):Table 4. Available at: <<http://www.cdc.gov/mmwr/preview/mmwrhtml/mm4853a1.htm>>. Accessed April 22, 2002.
91. Texas Department of Health, Associateship for Disease Control and Prevention. *Epidemiology Annual Report Online, 1999*. Available at: <<http://www.tdh.state.tx.us/epidemiology/99annual/frames/frames.htm>>. Accessed April 19, 2002.
92. Centers for Disease Control and Prevention. *Tracking the Hidden Epidemics: Trends in STDs in the United States 2000:23*. Available at: <http://www.cdc.gov/nchstp/dstd/Stats_Trends/Trends2000.pdf>. Accessed April 19, 2002.



93. Summary of Notifiable Diseases, United States, 1999. *MMWR* 2001 April 6;48(53): Table 3. Available at: <<http://www.cdc.gov/mmwr/preview/mmwrhtml/mm4853a1.htm>>. Accessed April 22, 2002.
94. Texas Department of Health, Associateship for Disease Control and Prevention. *Epidemiology Annual Report Online*, 1999. Available at: <<http://www.tdh.state.tx.us/epidemiology/99annual/frames/frames.htm>> Accessed April 19, 2002.
95. Texas Department of Health, Bureau of Immunization and Pharmacy Support, analysis of NHANES III data, i.e., prevalence as reported by NHANES III applied to Texas population figures.
96. Centers for Disease Control and Prevention. *Tracking the Hidden Epidemics: Trends in STDs in the United States 2000:23*. Available at: <http://www.cdc.gov/nchstp/dstd/Stats_Trends/Trends2000.pdf>. Accessed April 19, 2002.
97. Kaiser Family Foundation. *Sexually Transmitted Diseases in America: How Many Cases and at What Cost? Part 3*: Table 4. Available at: <http://www.kff.org/content/archive/1445/std_rep3.html>. Accessed April 19, 2002.
98. Kim WR, Poterucha JJ. Is It Time for Mass Screening for Hepatitis C? *American Journal of Medicine* 2001 Dec 1;111(8):667.
99. Texas Department of Health, Associateship for Disease Control and Prevention. *Epidemiology Annual Report Online*, 1999. Available at: <<http://www.tdh.state.tx.us/epidemiology/99annual/frames/frames.htm>>. Accessed April 19, 2002.
100. Texas Department of Health, Infectious Disease Epidemiology and Surveillance Division. *Hepatitis C Annual Report: 1999*. Available at: <<http://www.tdh.state.tx.us/ideas/factsht/Annualreport1999.htm>>. Accessed April 22, 2002.
101. Kathleen Shupe-Ricksecker, Texas Department of Health, Infectious Disease Epidemiology and Surveillance Division, personal communication, May 20, 2002.
102. Texas Department of Health, Infectious Disease Epidemiology and Surveillance Division. *Hepatitis C Annual Report: 1999*. Available at: <<http://www.tdh.state.tx.us/ideas/factsht/Annualreport1999.htm>>. Accessed April 22, 2002.
103. Texas Department of Health, Infectious Disease Epidemiology and Surveillance Division. *Hepatitis C Annual Report: 1999*. Available at: <<http://www.tdh.state.tx.us/ideas/factsht/Annualreport1999.htm>>. Accessed April 22, 2002.
104. Texas Department of Health, Infectious Disease Epidemiology and Surveillance Division. *Hepatitis C Annual Report: 1999*. Available at: <<http://www.tdh.state.tx.us/ideas/factsht/Annualreport1999.htm>>. Accessed April 22, 2002.
105. National Center for Infectious Diseases. *Viral Hepatitis C Fact Sheet*. Available at: <http://www.cdc.gov/ncidod/diseases/hepatitis/c/fact.htm>. Accessed April 23, 2002.
106. Kim WR, Poterucha JJ. Is It Time for Mass Screening for Hepatitis C? *American Journal of Medicine* 2001 Dec 1;111(8):667.
107. Texas Department of Health, Infectious Disease Epidemiology and Surveillance Division. *Hepatitis C Annual Report: 1999*. Available at: <<http://www.tdh.state.tx.us/ideas/factsht/Annualreport1999.htm>>. Accessed April 22, 2002.



108. Alter MJ, et al. The prevalence of hepatitis C virus infection in the United States, 1988 through 1994. *New England Journal of Medicine* 1999 Aug 19;341(8):558.
109. Texas Department of Health, Infectious Disease Epidemiology and Surveillance Division. *Hepatitis C Annual Report: 1999*. Available at: <<http://www.tdh.state.tx.us/ideas/factsht/Annualreport1999.htm>>. Accessed April 22, 2002.
110. Summary of Notifiable Diseases, United States, 1999. *MMWR* 2001 April 6;48(53): Table 4. Available at: <<http://www.cdc.gov/mmwr/preview/mmwrhtml/mm4853a1.htm>>. Accessed April 22, 2002.
111. Texas Department of Health, Infectious Disease Epidemiology and Surveillance Division. *Hepatitis C Annual Report: 1999*. Available at: <<http://www.tdh.state.tx.us/ideas/factsht/Annualreport1999.htm>>. Accessed April 22, 2002.
112. Summary of Notifiable Diseases, United States, 1999. *MMWR* 2001 April 6;48(53): Table 3. Available at: <<http://www.cdc.gov/mmwr/preview/mmwrhtml/mm4853a1.htm>>. Accessed April 22, 2002.
113. Centers for Disease Control and Prevention, National Center for Infectious Diseases. *Viral Hepatitis C Fact Sheet*. Available at: <<http://www.cdc.gov/ncidod/diseases/hepatitis/c/fact.htm>>. Accessed May 31, 2002.
114. *Health Disparities in Texas: An Epidemiologic Review of Priority Health Outcomes*. Austin: Texas Department of Health. March 2002:69.
115. *Health Disparities in Texas: An Epidemiologic Review of Priority Health Outcomes*. Austin: Texas Department of Health. March 2002:71.
116. Texas Department of Health, Tuberculosis Elimination Division, unpublished data. May 17, 2002.
117. Texas Department of Health, Tuberculosis Elimination Division, unpublished data. May 17, 2002.
118. Texas Department of Health, Tuberculosis Elimination Division, unpublished data. May 17, 2002.
119. National Center for HIV, STD and TB Prevention. *Surveillance Reports: Reported Tuberculosis in the United States, 2000*, Table 1. Available at: <<http://www.cdc.gov/nchstp/tb/surv/surv2000/default.htm>>. Accessed April 22, 2002.
- National Center for HIV, STD and TB Prevention. *Press release: U.S. TB Cases Decline Seven Percent in 2000, Reaching All-Time Low*. June 12, 2001. Available at: <<http://www.cdc.gov/nchstp/tb/pubs/pressrelease/061201.htm>>. Accessed April 22, 2002.
120. National Tuberculosis Surveillance System, Division of Tuberculosis Elimination, Centers for Disease Control and Prevention. Provisional 2001 data. March 5, 2002.
121. National Center for HIV, STD and TB Prevention. *Surveillance Reports: Reported Tuberculosis in the United States, 2000*, Tables 7 and 8. Available at: <<http://www.cdc.gov/nchstp/tb/surv/surv2000/default.htm>>. Accessed April 22, 2002.
122. Texas Department of Health, Tuberculosis Elimination Division, unpublished data. May 17, 2002.
123. Texas Department of Health, Tuberculosis Elimination Division, unpublished data. May 17, 2002.



124. National Center for HIV, STD and TB Prevention. *Surveillance Reports: Reported Tuberculosis in the United States, 2000*: Table 3. Available at: <<http://www.cdc.gov/nchstp/tb/surv/surv2000/default.htm>>. Accessed April 22, 2002.
125. Texas Department of Health, Tuberculosis Elimination Division, unpublished data. May 17, 2002.
126. Summary of Notifiable Diseases, United States, 2000. *MMWR* 2002 June 14;49 (53): Table 4. Available at: <<http://www.cdc.gov/mmwr/preview/mmwrhtml/mm4953a1.htm>>. Accessed July 9, 2002.
127. Texas Department of Health, Tuberculosis Elimination Division, unpublished data. May 17, 2002.
128. National Center for HIV, STD and TB Prevention. *Surveillance Reports: Reported Tuberculosis in the United States, 2000*. Table 2 Available at: <<http://www.cdc.gov/nchstp/tb/surv/surv2000/default.htm>>. Accessed April 22, 2002.
129. Texas Department of Health, Tuberculosis Elimination Division, unpublished data. May 17, 2002.
130. *Health Disparities in Texas: An Epidemiologic Review of Priority Health Outcomes*. Austin: Texas Department of Health. March 2002:69.
131. David Bastis, Texas Department of Health, Bureau of Immunization and Pharmacy Support, personal communication, May 21, 2002.
132. David Bastis, Texas Department of Health, Bureau of Immunization and Pharmacy Support, personal communication, May 21, 2002.
133. National Immunization Program. *Parents Guide to Childhood Immunization: Pertussis*. Available at: <<http://www.cdc.gov/nip/publications/Parents-Guide/default.htm>>. Accessed April 22, 2002.
134. National, State, and Urban Area Vaccination Coverage Levels Among Children Aged 19–35 Months — United States, 2000. *MMWR* 2001 August 3;50(30):638. Available at: <<http://www.cdc.gov/mmwr/preview/mmwrhtml/mm5030a1.htm>>. Accessed April 22, 2002.
135. David Bastis, Texas Department of Health, Bureau of Immunization and Pharmacy Support, personal communication, March 25, 2002.
National, State, and Urban Area Vaccination Coverage Levels Among Children Aged 19–35 Months — United States, 2000. *MMWR* 2001 August 3;50(30):638. Available at: <<http://www.cdc.gov/mmwr/preview/mmwrhtml/mm5030a1.htm>>. Accessed April 22, 2002.
136. *Health Disparities in Texas: An Epidemiologic Review of Priority Health Outcomes*. Austin: Texas Department of Health. March 2002:47.
137. David Bastis, Texas Department of Health, Bureau of Immunization and Pharmacy Support, personal communication, March 25, 2002.
138. Texas Department of Health, Bureau of Immunization and Pharmacy Support.
139. National Center for Health Statistics. *Fast stats A to Z: Whooping Cough*. Available at: <<http://www.cdc.gov/nchs/fastats/whooping.htm>>. Accessed April 23, 2002.
140. David Bastis, Texas Department of Health, Bureau of Immunization and Pharmacy Support, personal communication, March 25, 2002.



141. David Bastis, Texas Department of Health, Bureau of Immunization and Pharmacy Support, personal communication, March 25, 2002.
142. David Bastis, Texas Department of Health, Bureau of Immunization and Pharmacy Support, personal communication, July 11, 2002.
143. Summary of Notifiable Diseases, United States, 1999. *MMWR* 2001 April 6;48(53): Table 4. Available at: <<http://www.cdc.gov/mmwr/preview/mmwrhtml/mm4853a1.htm>>. Accessed April 22, 2002.
144. David Bastis, Texas Department of Health, Bureau of Immunization and Pharmacy Support, personal communication, March 25, 2002.
145. Summary of Notifiable Diseases, United States, 1999. *MMWR* 2001 April 6;48(53): Table 3. Available at: <<http://www.cdc.gov/mmwr/preview/mmwrhtml/mm4853a1.htm>>. Accessed April 22, 2002.
146. Guris D, et al. Changing epidemiology of pertussis in the United States: Increasing reported incidence among adolescents and adults, 1990–1996. *Clinical Infectious Diseases*. 1999 Jun;28(6):1230–7.
Summary of Notifiable Diseases, United States, 1999. *MMWR* 2001 April 6;48(53): Table 3. Available at: <<http://www.cdc.gov/mmwr/preview/mmwrhtml/mm4853a1.htm>>. Accessed April 22, 2002.
147. Pertussis — United States, 1997–2000. *MMWR* 2002 February 1;51(04): 73–76.
148. Guris D, et al. Changing epidemiology of pertussis in the United States: Increasing reported incidence among adolescents and adults, 1990–1996. *Clin Infect Dis*. 1999 Jun;28(6):1230–7.
Summary of Notifiable Diseases, United States, 1999. *MMWR* 2001 April 6;48(53): Table 3.
Available at: <<http://www.cdc.gov/mmwr/preview/mmwrhtml/mm4853a1.htm>>. Accessed April 22, 2002.
149. Texas Department of Health, Associateship for Disease Control and Prevention. *Epidemiology Annual Report Online*, 1999. Available at: <<http://www.tdh.state.tx.us/epidemiology/99annual/frames/frames.htm>>. Accessed April 19, 2002.
150. Texas Department of Health, Infectious Disease Epidemiology and Surveillance Division. *Facts About Meningococcal Meningitis*. Available at: <<http://www.tdh.state.tx.us/ideas/factsht/mengitis.htm>>. Accessed April 23, 2002.
151. Pamela Winscher, Texas Department of Health, Infectious Disease Epidemiology and Surveillance Division, personal communication, May 22, 2002.
152. Prevention and Control of Meningococcal Disease: Recommendations of the Advisory Committee on Immunization (ACIP). *MMWR* 2000 June 30;49(RR07);1–10. Available at: <<http://www.cdc.gov/mmwr/preview/mmwrhtml/rr4907a1.htm>>. Accessed April 23, 2002.
153. Texas Department of Health, Associateship for Disease Control and Prevention. *Epidemiology Annual Report Online*, 1999. Available at: <<http://www.tdh.state.tx.us/epidemiology/99annual/frames/frames.htm>>. Accessed April 19, 2002.
154. Pamela Winscher, Texas Department of Health, Infectious Disease Epidemiology and Surveillance Division, personal communication, May 24, 2002.
155. Meningococcal Disease. *Disease Prevention New* 2001 Jan. 29;61(3):1–6. Available at: <<http://www.tdh.state.tx.us/phpep/dpn/issues/dpn61n03.pdf>>. Accessed April 23, 2002.



156. Prevention and Control of Meningococcal Disease: Recommendations of the Advisory Committee on Immunization (ACIP). *MMWR* 2000 June 30;49(RR07);1–10. Available at: <<http://www.cdc.gov/mmwr/preview/mmwrhtml/rr4907a1.htm>>. Accessed April 23, 2002.
157. Meningococcal Disease. *Disease Prevention News* 2001 Jan. 29;61(3):1–6. Available at: <<http://www.tdh.state.tx.us/phpep/dpn/issues/dpn61n03.pdf>>. Accessed April 23, 2002.
158. Pamela Winscher, Texas Department of Health, Infectious Disease Epidemiology and Surveillance Division, personal communication, May 22, 2002.
159. Prevention and Control of Meningococcal Disease: Recommendations of the Advisory Committee on Immunization (ACIP). *MMW* 2000 June 30;49(RR07);1–10. Available at: <<http://www.cdc.gov/mmwr/preview/mmwrhtml/rr4907a1.htm>>. Accessed April 23, 2002.
160. Pamela Winscher, Texas Department of Health, Infectious Disease Epidemiology and Surveillance Division, personal communication, May 22, 2002.
161. Summary of Notifiable Diseases, United States, 1999. *MMWR* 2001 April 6;48(53): Table 4. Available at: <<http://www.cdc.gov/mmwr/preview/mmwrhtml/mm4853a1.htm>>. Accessed April 22, 2002.
162. Texas Department of Health, Associateship for Disease Control and Prevention. *Epidemiology Annual Report Online, 1999*. Available at: <<http://www.tdh.state.tx.us/epidemiology/99annual/frames/frames.htm>>. Accessed April 19, 2002.
163. Prevention and Control of Meningococcal Disease: Recommendations of the Advisory Committee on Immunization (ACIP). *MMWR* 2000 June 30;49(RR07):1. Available at: <<http://www.cdc.gov/mmwr/preview/mmwrhtml/rr4907a1.htm>>. Accessed April 23, 2002.
164. Centers for Disease Control and Prevention. Division of Bacterial and Mycotic Diseases. *Disease Information: Foodborne Infections*. Available at: <http://www.cdc.gov/ncidod/dbmd/diseaseinfo/foodborneinfections_g.htm>. Accessed April 23, 2002.
165. Preliminary FoodNet Data on the Incidence of Foodborne Illnesses — Selected Sites, United States 1999. *MMWR* 2000 March 17;49(10):201–05. Available at: <<http://www.cdc.gov/mmwr/preview/mmwrhtml/mm4910a1.htm>>. Accessed April 23, 2002.
166. Linda Gaul, Texas Department of Health, Bureau of Communicable Disease Control, Infectious Disease Epidemiology and Surveillance Division, personal communication, May 22, 2002.
167. Mead et al. Centers for Disease Control and Prevention. Food-Related Illness and Death in the United States. *Emerging Infectious Diseases* September–October 1999;5(5). Available at: <<http://www.cdc.gov/ncidod/eid/vol5no5/mead.htm>>. Accessed June 3, 2002.
168. Centers for Disease Control and Prevention. *Salmonella Cost Estimate Update Using FoodNet Data*. FoodNet Publications.
169. Lisa Marengo, Texas Department of Health, Bureau of Communicable Disease Control, Infectious Disease Epidemiology and Surveillance Division, personal communication, May 22, 2002.
170. Lisa Marengo, Texas Department of Health, Bureau of Communicable Disease Control, Infectious Disease Epidemiology and Surveillance Division, personal communication, May 22, 2002.



171. Lisa Marengo, Texas Department of Health, Bureau of Communicable Disease Control, Infectious Disease Epidemiology and Surveillance Division, personal communication, May 22, 2002.
172. Lisa Marengo, Texas Department of Health, Bureau of Communicable Disease Control, Infectious Disease Epidemiology and Surveillance Division, personal communication, May 22, 2002.
173. Mead et al. Centers for Disease Control and Prevention. Food-Related Illness and Death in the United States. *Emerging Infectious Diseases* September–October 1999;5(5). Available at: <<http://www.cdc.gov/ncidod/eid/vol5no5/mead.htm>>. Accessed June 3, 2002.
174. Lisa Marengo, Texas Department of Health, Bureau of Communicable Disease Control, Infectious Disease Epidemiology and Surveillance Division, personal communication, May 22, 2002.
175. Texas Department of Health, Maintaining a System of Readiness for any Bioterrorist Attack. *Accent on Health*. September 28, 2001. Available at: <<http://www.tdh.state.tx.us/bioterrorism/facts/public.htm>>. Accessed April 23, 2002.
176. Jernigan JA, et al. Bioterrorism-related inhalational anthrax: the first 10 cases reported in the United States. *Emerging Infectious Diseases* 2001 Nov–Dec;7(6):933–44. Available at: <<http://www.cdc.gov/ncidod/EID/vol7no6/pdf/jernigan.pdf>>. Accessed April 23, 2002.
177. Texas Department of Health. *Bacillus anthracis as a Bioterrorist Agent*. Available at: <<http://www.tdh.state.tx.us/bioterrorism/facts/anthrax.html>>. Accessed April 23, 2002.
178. Texas Department of Health. *Bacillus anthracis as a Bioterrorist Agent*. Available at: <<http://www.tdh.state.tx.us/bioterrorism/facts/anthrax.html>>. Accessed April 23, 2002.
179. Texas Department of Health. Maintaining a System of Readiness for any Bioterrorist Attack. *Accent on Health*. September 28, 2001. Available at: <<http://www.tdh.state.tx.us/bioterrorism/facts/public.htm>>. Accessed April 23, 2002.
180. Texas Department of Health, Infectious Disease Epidemiology and Surveillance Division. *IDEAS Data Surveillance Sheets*. Available at: <<http://www.tdh.state.tx.us/ideas/track/track.htm>>. Accessed April 23, 2002.
181. Texas Department of Health, Infectious Disease Epidemiology and Surveillance Division. *IDEAS Data Surveillance Sheets*. Available at: <<http://www.tdh.state.tx.us/ideas/track/track.htm>>. Accessed April 23, 2002.
182. Jernigan JA, et al. Bioterrorism-related inhalational anthrax: The first 10 cases reported in the United States. *Emerging Infectious Diseases* 2001 Nov–Dec;7(6):933–44. Available at: <<http://www.cdc.gov/ncidod/EID/vol7no6/pdf/jernigan.pdf>>. Accessed April 23, 2002.
183. Update: Investigation of Bioterrorism-Related Anthrax — Connecticut, 2001. *MMWR* 2001 December 7;50(48):1077–79. Available at: <<http://www.cdc.gov/mmwr/preview/mmwrhtml/mm5048a1.htm>>. Accessed April 23, 2002.
184. Jernigan JA, et al. Bioterrorism-related inhalational anthrax: The first 10 cases reported in the United States. *Emerging Infectious Diseases* 2001 Nov–Dec;7(6):933–44. Available at: <<http://www.cdc.gov/ncidod/EID/vol7no6/pdf/jernigan.pdf>>. Accessed April 23, 2002.
Update: Investigation of Bioterrorism-Related Anthrax — Connecticut, 2001. *MMWR* 2001 December 7;50(48):1077–79. Available at: <<http://www.cdc.gov/mmwr/preview/mmwrhtml/mm5048a1.htm>>. Accessed April 23, 2002.



185. Center for Civilian Biodefense Strategies. *Smallpox*. Available at: <<http://hopkins-biodefense.org/pages/agents/agentsmallpox.html>>. Accessed April 23, 2002.
186. Centers for Disease Control and Prevention. Public Health Emergency Preparedness & Response. *Facts About Smallpox*. Available at: <<http://www.bt.cdc.gov/DocumentsApp/FactSheet/SmallPox/About.asp>>. Accessed April 23, 2002.
187. Centers for Disease Control and Prevention. Public Health Emergency Preparedness & Response. *Facts About Smallpox*. Available at: <<http://www.bt.cdc.gov/DocumentsApp/FactSheet/SmallPox/About.asp>>. Accessed April 23, 2002.
188. Center for Civilian Biodefense Strategies. *Smallpox*. Available at: <<http://hopkins-biodefense.org/pages/agents/agentsmallpox.html>>. Accessed April 23, 2002.
189. Centers for Disease Control and Prevention. Public Health Emergency Preparedness & Response. *Facts About Smallpox*. Available at: <<http://www.bt.cdc.gov/DocumentsApp/FactSheet/SmallPox/About.asp>>. Accessed April 23, 2002.
190. Centers for Disease Control and Prevention. Public Health Emergency Preparedness & Response. *Facts About Smallpox*. Available at: <<http://www.bt.cdc.gov/DocumentsApp/FactSheet/SmallPox/About.asp>>. Accessed April 23, 2002.
191. Irons JV, Sullivan TD, Cook EBM, Cox GW, and Hale RA. Outbreak of Smallpox in the Lower Rio Grande Valley of Texas in 1949. *American Journal of Public Health* Jan. 1953;43(1):25–29.



Chapter 6: Maternal and Child Health

1. Margaret Mendez, Texas Department of Health, Bureau of Women's Health, personal communication, July 8, 2002.
2. Office of Health Information and Analysis. *Healthy People 2000 Health Status Indicators by Texas Public Health Regions and Race/Ethnicity*, 1990–1999. Part One. Austin: Texas Department of Health. February 2002:8–9. Available at: <<http://www.tdh.state.tx.us/dpa/hppt1.pdf>>. Accessed April 5, 2002.
3. Petrini J, Damus K, Johnston Jr., RB. Trends in Infant Mortality Attributable to Birth Defects — United States, 1980–1995. *MMWR* 1998 September 25;47(37):773.
4. Texas Department of Health, Bureau of Vital Statistics. *Summary of Vital Statistics for Texas 2000*. Available at: <http://www.tdh.state.tx.us/bvs/stats00/annr_hm/00summ.htm>. Accessed April 5, 2002.
5. Office of Health Information and Analysis. *Healthy People 2000 Health Status Indicators by Texas Public Health Regions and Race/Ethnicity*, 1990–1999. Part One. Austin: Texas Department of Health. February 2002:8–9. Available at: <<http://www.tdh.state.tx.us/dpa/hppt1.pdf>>. Accessed April 5, 2002.
6. Hoyert DL, Freedman MA, Strobino DM, Guyer B. Annual Survey of Vital Statistics. *Pediatrics* 2001;108(6):1247.
7. *Health Disparities in Texas: An Epidemiologic Review of Priority Health Outcomes*. Austin: Texas Department of Health. March 2002:53.
8. Texas Department of Health, Bureau of Vital Statistics. *2000 Mortality*. Available at: <<http://www.tdh.state.tx.us/bvs/stats00/text/00mortal.htm>>. Accessed April 5, 2002.
9. (1990 data) Keppel KG, Percy JN, Wagener DK. Trends in Racial and Ethnic-Specific Rates for the Health Status Indicators: United States: 1990–1998, *Healthy People 2000 Statistical Notes* No. 23, January 2002:3. Available at: <<http://www.cdc.gov/nchs/data/statnt/statnt23.pdf>>. Accessed April 5, 2002.
(2000 data) Hoyert DL, Freedman MA, Strobino DM, Guyer B. Annual Survey of Vital Statistics. *Pediatrics* 2001;108(6):1247.
10. *Health Disparities in Texas: An Epidemiologic Review of Priority Health Outcomes*. Austin: Texas Department of Health. March 2002:61–62.
11. *Health Disparities in Texas: An Epidemiologic Review of Priority Health Outcomes*. Austin: Texas Department of Health. March 2002:62–63.
12. Texas Department of Health, Texas Birth Defects Monitoring Division. Texas Birth Defect Counts and Rates 1996–1997. Unpublished manuscript. 2002.
13. Williams et al. Prevalence of spina bifida and anencephaly during the transition to mandatory folic acid fortification in the United States. *Teratology* 2002(66);33–39.



14. *Texas Birth Defects Registry Report of Birth Defects Among 1996 and 1997 Deliveries*. Austin: Texas Department of Health. September 2000:24.
15. *Health Disparities in Texas: An Epidemiologic Review of Priority Health Outcomes*. Austin: Texas Department of Health. March 2002:61.
16. *Texas Birth Defects Monitor. Recent High rates of Anencephaly in Laredo*. Austin: Texas Department of Health. June 2001. 7(1):1–2.
17. National Center on Birth Defects and Developmental Disabilities. *Why Folic Acid is So Important*. February 28, 2002. Available at: <<http://www.cdc.gov/ncbddd/folicacid>>. Accessed: April 5, 2002.
18. Amy Case, Texas Department of Health, Birth Defects Registry, personal communication, May 1, 2002.
19. Kiely JL, Kogan MD. Reproductive Health of Women — Prenatal Care. In *From Data to Action: CDC's Public Health Surveillance for Women, Infants and Children*. Atlanta, GA: US Department of Health and Human Services, 1993:105–18. Available at: <<http://www.cdc.gov/nccdphp/drh/dataact/pdf/rhow8.pdf>>. Accessed April 8, 2002.
20. Office of Health Information and Analysis. *Healthy People 2000 Health Status Indicators by Texas Public Health Regions and Race/Ethnicity, 1990–1999. Part One*. Austin: Texas Department of Health. February 2002:38. Available at: <<http://www.tdh.state.tx.us/dpa/hppt1.pdf>>. Accessed April 5, 2002.
21. Texas Department of Health. Bureau of Vital Statistics. *2000 Annual Report — Natality*. Available at: <<http://www.tdh.state.tx.us/bvs/stats00/text/00natal.htm>>. Accessed April 8, 2002.
22. Texas Department of Health. Bureau of Vital Statistics. *2000 Annual Report — Natality*. Available at: <<http://www.tdh.state.tx.us/bvs/stats00/text/00natal.htm>>. Accessed April 8, 2002.
23. Martin JA, Hamilton BE, Ventura SJ, Menacker F, Park MM. Births: final data for 2000. *National Vital Statistics Report* 2002 Feb 12;50(5):12–13. Available at: <http://www.cdc.gov/nchs/data/nvsr/nvsr50/nvsr50_05.pdf>. Accessed May 31, 2002.
24. Texas Department of Health. Bureau of Vital Statistics. *1994 Annual Report — Natality*. Available at: <<http://www.tdh.state.tx.us/bvs/stats94/text/natal94.htm>>. Accessed April 8, 2002.
25. Martin JA, Hamilton BE, Ventura SJ, Menacker F, Park MM. Births: final data for 2000. *National Vital Statistics Report* 2002 Feb 12;50(5):12–13. Available at: <http://www.cdc.gov/nchs/data/nvsr/nvsr50/nvsr50_05.pdf>. Accessed May 31, 2002.
26. Bob Woldman, Texas Department of Health, Bureau of Vital Statistics, personal communication, July 9, 2002.
27. Martin JA, Hamilton BE, Ventura SJ, Menacker F, Park MM. Births: final data for 2000. *National Vital Statistics Report* 2002 Feb 12;50(5): 12–13. Available at: <http://www.cdc.gov/nchs/data/nvsr/nvsr50/nvsr50_05.pdf>. Accessed May 31, 2002.
28. Office of Health Information and Analysis. *Healthy People 2000 Health Status Indicators by Texas Public Health Regions and Race/Ethnicity, 1990–1999. Part One*. Austin: Texas Department of Health. February 2002:34. Available at: <<http://www.tdh.state.tx.us/dpa/hppt1.pdf>>. Accessed April 5, 2002.



29. Martin JA, Hamilton BE, Ventura SJ, Menacker F, Park MM. Births: final data for 2000. *National Vital Statistics Report* 2002 Feb 12;50(5): 12–13. Available at: <http://www.cdc.gov/nchs/data/nvsr/nvsr50/nvsr50_05.pdf>. Accessed May 31, 2002.
30. Texas Department of Health. Bureau of Vital Statistics. *2000 Annual Report — Natality*. Available at: <<http://www.tdh.state.tx.us/bvs/stats00/text/00natal.htm>>. Accessed April 8, 2002.
31. Office of Health Information and Analysis. *Healthy People 2000 Health Status Indicators by Texas Public Health Regions and Race/Ethnicity, 1990–1999. Part One*. Austin: Texas Department of Health. February 2002:34–35. Available at: <<http://www.tdh.state.tx.us/dpa/hppt1.pdf>>. Accessed April 5, 2002.
32. Hoyert DL, Freedman MA, Strobino DM, Guyer B. Annual Survey of Vital Statistics. *Pediatrics* 2001;108(6):1241–55.
33. Texas Department of Health. Bureau of Vital Statistics. *2000 Annual Report — Natality*. Available at: <<http://www.tdh.state.tx.us/bvs/stats00/text/00natal.htm>>. Accessed April 8, 2002.
34. Hoyert DL, Freedman MA, Strobino DM, Guyer B. Annual Survey of Vital Statistics. *Pediatrics* 2001;108(6):1241–1255.
35. Texas Department of Health. Bureau of Vital Statistics. *2000 Annual Report — Natality*. Available at: <<http://www.tdh.state.tx.us/bvs/stats00/text/00natal.htm>>. Accessed May 23, 2002.
36. Leading Health Indicators. In: US Department of Health and Human Services. *Healthy People 2010: Understanding and Improving Health*. Vol. 1, 2nd ed. Boston: Jones and Bartlett. 2000:31. Available at: <<http://www.health.gov/healthypeople/Document/tableofcontents.htm#volume1>>. Accessed April 12, 2002.
Aligne CA, Stoddard JJ. Tobacco and children. An economic evaluation of the medical effects of parental smoking. *Archives of Pediatric and Adolescent Medicine* 1997 Jul;151(7):648–53.
37. National Center on Birth Defects and Developmental Disabilities. *Fetal Alcohol Syndrome*. Available at: <<http://www.cdc.gov/ncbddd/fas>>. Accessed April 8, 2002.
38. Martin JA, Hamilton BE, Ventura SJ, Menacker F, Park MM. Births: final data for 2000. *National Vital Statistics Report* 2002 Feb 12;50(5): 12–13. Available at: <http://www.cdc.gov/nchs/data/nvsr/nvsr50/nvsr50_05.pdf>. Accessed May 31, 2002.
Buescher PA, Taylor KP, et al. The quality of the new birth certificate data: A validation study in North Carolina. *American Journal of Public Health* 1993 Aug; 83(8):1163–65.
39. Bob Woldman, Texas Department of Health, Bureau of Vital Statistics, personal communication, July 9, 2002.
40. Martin JA, Hamilton BE, Ventura SJ, Menacker F, Park MM. Births: Final data for 2000. *National Vital Statistics Report* 2002 Feb 12;50(5):12–13. Available at: <http://www.cdc.gov/nchs/data/nvsr/nvsr50/nvsr50_05.pdf>. Accessed May 31, 2002.
41. Martin JA, Hamilton BE, Ventura SJ, Menacker F, Park MM. Births: Final data for 2000. *National Vital Statistics Report* 2002 Feb 12;50(5):12–13. Available at: <http://www.cdc.gov/nchs/data/nvsr/nvsr50/nvsr50_05.pdf>. Accessed May 31, 2002.
42. Texas Department of Health. Bureau of Vital Statistics. *2000 Annual Report — Natality*. Available at: <<http://www.tdh.state.tx.us/bvs/stats00/text/00natal.htm>>. Accessed April 8, 2002.



43. Office of Health Information and Analysis. *Healthy People 2000 Health Status Indicators by Texas Public Health Regions and Race/Ethnicity, 1990–1999. Part One*. Austin: Texas Department of Health. February 2002:34. Available at: <<http://www.tdh.state.tx.us/dpa/hppt1.pdf>>. Accessed April 5, 2002.
44. Texas Department of Health. Bureau of Vital Statistics. *2000 Annual Report — Natality*. Available at: <<http://www.tdh.state.tx.us/bvs/stats00/text/00natal.htm>>. Accessed April 8, 2002.
45. The Alan Guttmacher Institute. *Facts in Brief: Teen Sex and Pregnancy*. September 1999. Available at: <http://www.agi-usa.org/pubs/fb_teen_sex.html>. Accessed April 8, 2002.
46. Office of Health Information and Analysis. *Healthy People 2000 Health Status Indicators by Texas Public Health Regions and Race/Ethnicity, 1990–1999. Part One*. Austin: Texas Department of Health. February 2002:36. Available at: <<http://www.tdh.state.tx.us/dpa/hppt1.pdf>>. Accessed April 5, 2002.
47. Texas Department of Health. Bureau of Vital Statistics. *2000 Annual Report — Natality*. Available at: <<http://www.tdh.state.tx.us/bvs/stats00/text/00natal.htm>>. Accessed April 8, 2002.
48. Martin JA, Hamilton BE, Ventura SJ, Menacker F, Park MM. Births: final data for 2000. *National Vital Statistics Report* 2002 Feb 12;50(5). Available at: <http://www.cdc.gov/nchs/data/nvsr/nvsr50/nvsr50_05.pdf>. Accessed May 31, 2002.
49. Hoyert DL, Freedman MA, Strobino DM, Guyer B. Annual Survey of Vital Statistics. *Pediatrics* 2001;108(6):1241–1255.
50. Texas Department of Health. Bureau of Vital Statistics. *2000 Annual Report — Natality*. Available at: <<http://www.tdh.state.tx.us/bvs/stats00/text/00natal.htm>>. Accessed April 8, 2002.
51. Hoyert DL, Freedman MA, Strobino DM, Guyer B. Annual Survey of Vital Statistics. *Pediatrics* 2001;108(6):1241–1255.
52. Texas Department of Health. Bureau of Vital Statistics. *2000 Annual Report — Natality*. Available at: <<http://www.tdh.state.tx.us/bvs/stats00/text/00natal.htm>>. Accessed April 8, 2002.
Texas Department of Health. Bureau of Vital Statistics. *1994 Annual Report — Natality*. Available at: <<http://www.tdh.state.tx.us/bvs/stats94/text/natal94.htm>>. Accessed April 8, 2002.
53. Martin JA, Hamilton BE, Ventura SJ, Menacker F, Park MM. Births: final data for 2000. *National Vital Statistics Report* 2002 Feb 12;50(5). Available at: <http://www.cdc.gov/nchs/data/nvsr/nvsr50/nvsr50_05.pdf>. Accessed May 31, 2002.
54. Texas Department of Health. Bureau of Vital Statistics. *2000 Annual Report — Natality*. Available at: <<http://www.tdh.state.tx.us/bvs/stats00/text/00natal.htm>>. Accessed April 8, 2002.
Texas Department of Health. Bureau of Vital Statistics. *1994 Annual Report — Natality*. Available at: <<http://www.tdh.state.tx.us/bvs/stats94/text/natal94.htm>>. Accessed April 8, 2002.
55. Hoyert DL, Freedman MA, Strobino DM, Guyer B. Annual Survey of Vital Statistics. *Pediatrics*. 2001;108(6):1241–55.
56. Office of Health Information and Analysis. *Healthy People 2000 Health Status Indicators by Texas Public Health Regions and Race/Ethnicity, 1990–1999. Part One*. Austin: Texas Department of Health. February 2002:36. Available at: <<http://www.tdh.state.tx.us/dpa/hppt1.pdf>>. Accessed April 5, 2002.



Chapter 7 Injuries

1. Texas Department of Health. Bureau of Vital Statistics. *Texas Vital Statistics. 2000 Annual Report*. Available at: <<http://www.tdh.state.tx.us/bvs/stats00/annrpt.htm>>. Accessed July 3, 2002.
2. Texas Department of Health. Bureau of Vital Statistics. *Texas Vital Statistics. 2000 Annual Report*. Available at: <<http://www.tdh.state.tx.us/bvs/stats00/annrpt.htm>>. Accessed July 3, 2002.
3. Kathy Griffis-Bailey, Texas Department of Health, Traumatic Brain Injury Project, personal communication, May 10, 2002.
4. Texas Department of Health. Bureau of Vital Statistics. *Texas Vital Statistics. 2000 Annual Report*. Available at: <<http://www.tdh.state.tx.us/bvs/stats00/annrpt.htm>>. Accessed July 3, 2002.
5. Texas Department of Health. Bureau of Vital Statistics. *Texas Vital Statistics. 2000 Annual Report*. Available at: <<http://www.tdh.state.tx.us/bvs/stats00/annrpt.htm>>. Accessed July 3, 2002.
6. Texas Department of Health. Bureau of Vital Statistics. *Texas Vital Statistics. 2000 Annual Report*. Available at: <<http://www.tdh.state.tx.us/bvs/stats00/annrpt.htm>>. Accessed July 3, 2002.
7. Kathy Griffis-Bailey, Texas Department of Health, Traumatic Brain Injury Project, personal communication, May 10, 2002.
8. Kathy Griffis-Bailey, Texas Department of Health, Traumatic Brain Injury Project, personal communication, May 10, 2002.
9. Texas Department of Health. Bureau of Vital Statistics. *Texas Vital Statistics. 1999 Annual Report*. Available at: <<http://www.tdh.state.tx.us/bvs/stats99/annrpt.htm>>. Accessed July 19, 2002.
10. National Safety Council, *Report on Injuries in America, 2001*. Available at: <<http://www.nsc.org/library/rept2000.htm>>. Accessed April 12, 2002.
11. Texas Department of Health, Bureau of Epidemiology, Injury Epidemiology and Surveillance, *The Texas Perspective: Motor Vehicle Safety: A 20th Century Public Health Achievement*. Available at: <http://www.tdh.state.tx.us/injury/reports/mvccdc/mvc_cdc.htm>. Accessed June 5, 2002.
12. Texas Department of Health, Bureau of Epidemiology, Injury Epidemiology and Surveillance, *Fewer Die by Gunfire, but More Die in Traffic Crashes*. Available at: <http://www.tdh.state.tx.us/injury/reports/mvccdc/mvc_cdc.htm>. Accessed June 5, 2002.
13. Texas Department of Health, Trauma Registry. 1998. Available at: <<http://www.tdh.state.tx.us/injury/reports/mva98age.htm>>. Accessed June 4, 2002.
14. National Safety Council. *Report on Injuries in America, 2001*. Available at: <<http://www.nsc.org/library/rept2000.htm>>. Accessed April 12, 2002.



15. National Center for Injury Prevention and Control. *Child Passenger Safety Fact Sheet*. Available at: <<http://www.cdc.gov/ncipc/factsheets/childpas.htm>>. Accessed May 22, 2002.
16. Centers for Disease Control and Prevention. "Injury and Violence Prevention." In: US Department of Health and Human Services. *Healthy People 2010: Understanding and Improving Health*. Boston: Jones and Bartlett, (2000):15.4–15.5. Available at: <<http://www.health.gov/healthypeople/Document/tableofcontents.htm#Volume2>>. Accessed April 12, 2002.
17. National Center for Injury Prevention and Control. *Preventing Bicycle-Related Head Injuries*. Available at: <<http://www.cdc.gov/ncipc/factsheets/bikehel.htm>>. Accessed May 22, 2002.
18. Centers for Disease Control and Prevention. Injury and Violence Prevention. In: US Department of Health and Human Services. *Healthy People 2010: Understanding and Improving Health*. Boston: Jones and Bartlett. 2000:15.4–15.5. Available at: <<http://www.health.gov/healthypeople/Document/tableofcontents.htm#Volume2>>. Accessed April 12, 2002.
19. American College of Emergency Physicians. *Seat Belts*. Available at: <<http://www.acep.org/1,399,0.html>>. Accessed May 22, 2002.
20. Kathy Griffis-Bailey, Texas Department of Health, Traumatic Brain Injury Project, personal communication, May 10, 2002.
21. National Center for Injury Prevention and Control. *What You Can Do to Prevent a Fire*. Available at: <<http://www.cdc.gov/ncipc/factsheets/preventfire.htm>>. Accessed May 22, 2002.
22. Centers for Disease Control and Prevention. Injury and Violence Prevention. In: US Department of Health and Human Services. *Healthy People 2010: Understanding and Improving Health*. Boston: Jones and Bartlett. 2000:15.4–15.5. Available at: <<http://www.health.gov/healthypeople/Document/tableofcontents.htm#Volume2>>. Accessed April 12, 2002.
23. Kathy Griffis-Bailey, Texas Department of Health, Traumatic Brain Injury Project, personal communication, May 10, 2002.
24. US Federal Bureau of Investigation. *Uniform Crime Reports (2000)*. Available at: <<http://www.fbi.gov/ucr/00cius.htm>>. Accessed July 3, 2002.
Texas Department of Public Safety. *2000 Crime in Texas Report*. Available at: <<http://www.txdps.state.tx.us/crimereports/>>. Accessed July 3, 2002
25. Office of Health Information and Analysis. *Healthy People 2000 Health Status Indicators by Texas Public Health Regions and Race/Ethnicity, 1990–1999. Part One*. Austin: Texas Department of Health. February 2002:14. Available at: <<http://www.tdh.state.tx.us/dpa/hpopt1.pdf>>. Accessed April 5, 2002.
26. Texas Department of Health, *Traumatic Brain Injury in Texas*. Available at: <<http://www.tdh.state.tx.us/braininjury/default.htm>>. Accessed July 3, 2002.
27. Texas Department of Public Safety. *2000 Crime in Texas Report*. Available at: <<http://www.txdps.state.tx.us/crimereports/Crime>>. Accessed June 4, 2002.
28. US Federal Bureau of Investigation. *Crime in the United States (2000)*. Available at: <<http://www.fbi.gov/ucr/ucr.htm>>. Accessed June 3, 2002.



29. Office of Health Information and Analysis. *Healthy People 2000 Health Status Indicators by Texas Public Health Regions and Race/Ethnicity, 1990-1999. Part One*. Austin: Texas Department of Health. February 2002:15. Available at: <<http://www.tdh.state.tx.us/dpa/hpopt1.pdf>>. Accessed April 5, 2002.
Texas Department of Public Safety. *2000 Crime in Texas Report*. Available at: <<http://www.txdps.state.tx.us/crimereports/Crime>>. Accessed June 4, 2002.
30. Office of Health Information and Analysis. *Healthy People 2000 Health Status Indicators by Texas Public Health Regions and Race/Ethnicity, 1990-1999. Part One*. Austin: Texas Department of Health. February 2002:14. Available at: <<http://www.tdh.state.tx.us/dpa/hpopt1.pdf>>. Accessed April 5, 2002.
31. Texas Department of Health. Bureau of Vital Statistics. *Texas Vital Statistics. 2000 Annual Report*. Available at <<http://www.tdh.state.tx.us/bvs/stats00/annrpt.htm>>. Accessed April 12, 2002.
32. Anderson RN. Deaths: Leading Causes for 1999. *National Vital Statistics Report*, 2001 Oct 12;49(11):1. Available at: <http://www.cdc.gov/nchs/data/nvsr/nvsr49/nvsr49_11.pdf>. Accessed June 4, 2002.
33. Texas Department of Public Safety. *2000 Crime in Texas Report*. Available at: <<http://www.txdps.state.tx.us/crimereports/Crime>>. Accessed June 4, 2002.
34. US Federal Bureau of Investigation. *Crime in the United States (2000)*. Available at: <<http://www.fbi.gov/ucr/ucr.htm>>. Accessed June 3, 2002.
35. Texas Department of Public Safety. *2000 Crime in Texas Report*. Available at: <<http://www.txdps.state.tx.us/crimereports/Crime>>. Accessed June 4, 2002.
36. US Federal Bureau of Investigation. *Crime in the United States (2000)*. Available at: <<http://www.fbi.gov/ucr/ucr.htm>>. Accessed June 3, 2002.
37. Texas Department of Public Safety. *2000 Crime in Texas Report*. Available at: <<http://www.txdps.state.tx.us/crimereports/Crime>>. Accessed June 4, 2002.
38. US Federal Bureau of Investigation. *Crime in the United States (2000)*. Available at: <<http://www.fbi.gov/ucr/ucr.htm>>. Accessed June 3, 2002.



Chapter 8 Mental Health

1. US Department of Health and Human Services. *Mental Health: A Report of the Surgeon General*. Rockville, MD: US Department of Health and Human Services. 1999. Available at: <<http://www.surgeongeneral.gov/library/mentalhealth/home.html>>. Accessed April 13, 2002.
2. Leading Health Indicators. In: US Department of Health and Human Services. *Healthy People 2010: Understanding and Improving Health*. Vol. 1, 2nd ed. Boston: Jones and Bartlett. 2000:36. Available at: <<http://www.health.gov/healthypeople/Document/tableofcontents.htm#volume1>>. Accessed April 12, 2002.
3. Texas Department of Mental Health and Mental Retardation. *Strategic Plan*. Austin: Texas Department of Mental Health and Mental Retardation. June 2000:52–54.
4. Heikes J, Arrigona N, Eisenberg M. *The Public Mental Health System in Texas and Its Relation to Criminal Justice*. Austin: Texas Criminal Justice Policy Council. February 2000. Quoted in Texas Department of Mental Health and Mental Retardation. *Strategic Plan*. Austin: Texas Department of Mental Health and Mental Retardation. June 2000:31.
5. National Mental Health Association. *Prevalence of Mental Disorders among Children in the Juvenile Justice System*. Available at: <<http://www.nmha.org/children/justjuv/prevalence.cfm>>. Accessed April 13, 2002.
6. National Institutes of Health. Mental Health and Mental Disorders. In: US Department of Health and Human Services. *Healthy People 2010: Understanding and Improving Health*. Vol. 2, 2nd ed. Boston: Jones and Bartlett. 2000:18-5. Available at: <<http://www.health.gov/healthypeople/Document/tableofcontents.htm#Volume2>>. Accessed April 12, 2002.
7. Texas Department of Mental Health and Mental Retardation. *Mental Health Facts*. Available at: <<http://www.mhmr.state.tx.us/CentralOffice/PublicInformationOffice/FaqsMHFACTS.html>>. Accessed April 12, 2002.
8. US Department of Health and Human Services. *Mental Health: A Report of the Surgeon General*. Rockville, MD: US Department of Health and Human Services. 1999:64. Available at: <<http://www.surgeongeneral.gov/library/mentalhealth/home.html>>. Accessed April 13, 2002.
9. US Department of Health and Human Services. *Mental Health, United States, 2000*. Rockville, MD: US Department of Health and Human Services. 2001: 39. Available at: <<http://www.mentalhealth.org/publications/allpubs/SMA01-3537/default.asp>>.
10. US Department of Health and Human Services. *Mental Health: Culture, Race, and Ethnicity — A Supplement to Mental Health: A Report of the Surgeon General*. Rockville, MD: US Department of Health and Human Services. 2001. Available at: <<http://www.mentalhealth.org/cre/ch3.asp>>. Accessed April 12, 2002.



11. US Department of Health and Human Services. *Mental Health: Culture, Race, and Ethnicity — A Supplement to Mental Health: A Report of the Surgeon General*. Rockville, MD: US Department of Health and Human Services. 2001. Available at: <<http://www.mentalhealth.org/cre/ch3.asp>>. Accessed April 12, 2002.
12. National Institute of Mental Health. *The Numbers Count: Mental Disorders in America*. Available at: <www.nimh.nih.gov/publicat/numbers.cfm>. Accessed April 13, 2002.
13. *Depression*. Available at: <<http://webmd.lycos.com/encyclopedia/article/1663.52947>>. Accessed June 8, 2002.
Bipolar Disorder. Available at: <<http://webmd.lycos.com/encyclopedia/article/2950.1312>>. Accessed June 8, 2002.
14. *Depression. What Increases Your Risk?* Available at: <<http://webmd.lycos.com/encyclopedia/article/1663.52944>>. Accessed June 8, 2002.
15. *Bipolar Disorder: What Increases Your Risk?* Available at: <<http://webmd.lycos.com/encyclopedia/article/2950.1309>>. Accessed June 8, 2002.
16. Texas Department of Mental Health and Mental Retardation. *Prevalence Data*. Available at: <<http://www.mhmr.state.tx.us/CentralOffice/ProgramStatisticsPlanning/Data.html>>. Accessed April 13, 2002.
17. National Institute of Mental Health. *The Numbers Count: Mental Disorders in America*. Available at: <www.nimh.nih.gov/publicat/numbers.cfm>. Accessed April 13, 2002.
18. National Institute of Mental Health. *The Numbers Count: Mental Disorders in America*. Available at: <www.nimh.nih.gov/publicat/numbers.cfm>. Accessed April 13, 2002.
19. National Institute of Mental Health. *The Numbers Count: Mental Disorders in America*. Available at: <www.nimh.nih.gov/publicat/numbers.cfm>. Accessed April 13, 2002.
20. National Institute of Mental Health. *The Numbers Count: Mental Disorders in America*. Available at: <www.nimh.nih.gov/publicat/numbers.cfm>. Accessed April 13, 2002.
21. National Institutes of Health. Mental Health and Mental Disorders. In: US Department of Health and Human Services. *Healthy People 2010: Understanding and Improving Health*. 2nd ed. Vol. 2 Boston: Jones and Bartlett. 2000:18-3. Available at: <<http://www.health.gov/healthypeople/Document/tableofcontents.htm#Volume2>>. Accessed April 12, 2002.
22. US Department of Health and Human Services. *Surgeon General's Call to Action to Prevent Suicide*. July 1999. Available at: <<http://www.surgeongeneral.gov/library/calltoaction/default.htm>>. Accessed April 13, 2002.
23. Texas Department of Health, Bureau of Vital Statistics. *Summary of Vital Statistics for Texas 2000*. Available at: <http://www.tdh.state.tx.us/bvs/stats00/annr_hm/00summ.htm>. Accessed April 1, 2002.
24. Anderson RN. Deaths: Leading Causes for 1999. *National Vital Statistics Report*, 2001 Oct 12;49(11):1. Available at: <http://www.cdc.gov/nchs/data/nvsr/nvsr49/nvsr49_11.pdf>. Accessed April 1, 2002.
25. Texas Department of Health. Bureau of Vital Statistics. *Texas Vital Statistics. 2000 Annual Report*. Available at: <<http://www.tdh.state.tx.us/bvs/stats00/annrpt.htm>>. Accessed April 13, 2002.
26. Hoyert DL, Arias E, Smith BL, Murphy SL, Kochanek KD. Deaths: Final Data for 1999. *National Vital Statistics Report*, 2001 Sept 21;49(8). Available at: <http://www.cdc.gov/nchs/data/nvsr/nvsr49/nvsr49_08.pdf>. Accessed April 12, 2002.



27. Texas Department of Health. Bureau of Vital Statistics. *Texas Vital Statistics. 2000 Annual Report*. Available at: <<http://www.tdh.state.tx.us/bvs/stats00/annrpt.htm>>. Accessed April 13, 2002.
28. Texas Department of Health. Bureau of Vital Statistics. *Texas Vital Statistics. 2000 Annual Report*. Available at: <<http://www.tdh.state.tx.us/bvs/stats00/annrpt.htm>>. Accessed April 13, 2002.
29. Keppel KG, Percy JN, Wagener DK. Trends in Racial and Ethnic-Specific Rates for the Health Status Indicators: United States: 1990–1998, *Healthy People 2000 Statistical Notes* No. 23, January 2002:5. Available at: <<http://www.cdc.gov/nchs/data/statnt/statnt23.pdf>>. Accessed April 13, 2002.
30. Texas Department of Health. Bureau of Vital Statistics. *Texas Vital Statistics. 2000 Annual Report*. Available at: <<http://www.tdh.state.tx.us/bvs/stats00/annrpt.htm>>. Accessed April 13, 2002.
31. National Institute of Mental Health. *The Numbers Count: Mental Disorders in America*. Available at: <www.nimh.nih.gov/publicat/numbers.cfm>. Accessed April 13, 2002.
32. McIntosh JL. 1999 *Official Final Statistics, USA Suicide*. American Association of Suicidology. Available at: <<http://www.iusb.edu/~jmcintos/SuicideStats.html>>. Accessed April 13, 2002.
33. Texas Department of Health, Injury Epidemiology and Surveillance Program. *Suicide in Texas*. Available at: <<http://www.tdh.state.tx.us/injury/reports/99rpts/slide09.htm>>. Accessed April 13, 2002.
34. National Institute of Mental Health. *The Numbers Count: Mental Disorders in America*. Available at: <www.nimh.nih.gov/publicat/numbers.cfm>. Accessed April 13, 2002.
35. McIntosh JL. 1999 *Official Final Statistics, USA Suicide*. American Association of Suicidology. Available at: <<http://www.iusb.edu/~jmcintos/SuicideStats.html>>. Accessed April 13, 2002.
36. Office of Health Information and Analysis. *Healthy People 2000 Health Status Indicators by Texas Public Health Regions and Race/Ethnicity, 1990–1999*. Part One. Austin: Texas Department of Health. February 2002:12. Available at: <<http://www.tdh.state.tx.us/dpa/hppt1.pdf>>. Accessed April 5, 2002.
37. Office of Health Information and Analysis. *Healthy People 2000 Health Status Indicators by Texas Public Health Regions and Race/Ethnicity, 1990–1999*. Part One. Austin: Texas Department of Health. February 2002:12. Available at: <<http://www.tdh.state.tx.us/dpa/hppt1.pdf>>. Accessed April 5, 2002.
38. National Institute of Mental Health. *The Numbers Count: Mental Disorders in America*. Available at: www.nimh.nih.gov/publicat/numbers.cfm. Accessed April 13, 2002.
39. World Fellowship for Schizophrenia, *No Family Is Immune*. Available at: <<http://www.world-schizophrenia.org/publications/01-nofamily.html>>. Accessed April 25, 2002.
40. US Department of Health and Human Services. *Mental Health: A Report of the Surgeon General*. Rockville, MD: US Department of Health and Human Services. 1999: 269–270. Available at: <<http://www.surgeongeneral.gov/library/mentalhealth/home.html>>. Accessed April 13, 2002.
41. US Department of Health and Human Services. *Mental Health: A Report of the Surgeon General*. Rockville, MD: US Department of Health and Human Services. 1999: 276. Available at: <<http://www.surgeongeneral.gov/library/mentalhealth/home.html>>. Accessed April 13, 2002.



42. US Department of Health and Human Services. *Mental Health: A Report of the Surgeon General*. Rockville, MD: US Department of Health and Human Services. 1999: 273. Available at: <<http://www.surgeongeneral.gov/library/mentalhealth/home.html>>. Accessed April 13, 2002.
43. Texas Department of Mental Health and Mental Retardation. *Prevalence Data*. Available at: <<http://www.mhmr.state.tx.us/CentralOffice/ProgramStatisticsPlanning/Data.html>>. Accessed April 13, 2002.
44. Texas Department of Health. Bureau of Vital Statistics. *Texas Vital Statistics. 2000 Annual Report*. Available at: <<http://www.tdh.state.tx.us/bvs/stats00/annrpt.htm>>. Accessed April 13, 2002.
45. National Institute of Mental Health, *Schizophrenia*. Available at <<http://www.nimh.nih.gov/publicat/schizoph.htm>>. Accessed April 25, 2002.
46. Gearson C. Schizophrenia Impacts Women Differently than Men. *Reuters Health*, April 16, 2002.
47. Gearson C. Schizophrenia Impacts Women Differently than Men. *Reuters Health*, April 16, 2002.



Chapter 9: Dental Health

1. Satcher, D. *Oral Health in America: A Report of the Surgeon General*. Washington, DC: US Department of Health and Human Services, US Public Health Service; 2000:vii. Available at: <<http://www.nidr.nih.gov/sgroahweb/home.htm>>. Accessed April 5, 2002.
2. National Center for Chronic Disease Prevention and Health Promotion. *Links Between Oral and General Health*. Available at: <<http://www.cdc.gov/nccdphp/oh/sgroahweb/home.htm>>. Accessed April 5, 2002.
3. Satcher, D. *Oral Health in America: A Report of the Surgeon General*. Washington, DC: US Department of Health and Human Services, US Public Health Service; 2000:252. Available at: <<http://www.nidr.nih.gov/sgroahweb/home.htm>>. Accessed April 5, 2002.
4. Satcher, D. *Oral Health in America: A Report of the Surgeon General*. Washington, DC: US Department of Health and Human Services, US Public Health Service; 2000:37–38. Available at: <<http://www.nidr.nih.gov/sgroahweb/home.htm>>. Accessed April 5, 2002.
5. National Center for Chronic Disease Prevention and Health Promotion. *Children's Oral Health. Dental Sealants. Frequently Asked Questions*. Available at: <<http://www.cdc.gov/nccdphp/oh/child-sealants-faq.htm>>. Accessed April 5, 2002.
6. American Dental Association. *Frequently Asked Questions, Diet and Dental Health*. Available at: <<http://www.ada.org/public/faq/diet.html>>. Accessed April 5, 2002.
7. Dental Task Force of the Greater Houston Metropolitan Area, in collaboration with the Department of Dental Public Health and Dental Hygiene, Dental Branch, University of Texas Health Science Center at Houston, supported by the Texas Department of Health, Innovations Grant No. 74474474444 2001.
8. Satcher, D. *Oral Health in America: A Report of the Surgeon General*. Washington, DC: US Department of Health and Human Services, US Public Health Service; 2000:64. Available at: <<http://www.nidr.nih.gov/sgroahweb/home.htm>>. Accessed April 5, 2002.
9. Satcher, D. *Oral Health in America: A Report of the Surgeon General*. Washington, DC: US Department of Health and Human Services, US Public Health Service; 2000:64. Available at: <<http://www.nidr.nih.gov/sgroahweb/home.htm>>. Accessed April 5, 2002.
10. Satcher, D. *Oral Health in America: A Report of the Surgeon General*. Washington, DC: US Department of Health and Human Services, US Public Health Service; 2000:2. Available at: <<http://www.nidr.nih.gov/sgroahweb/home.htm>>. Accessed April 5, 2002.
11. Centers for Disease Control and Prevention. Populations Receiving Optimally Fluoridated Public Drinking Water — United States, 2000. *MMWR*, 2002 Feb 22;51(7):144–47. Available at: <<http://www.cdc.gov/mmwr/preview/mmwrhtml/mm5107a2.htm>>. Accessed April 5, 2002.



12. National Center for Chronic Disease Prevention and Health Promotion. *Children's Oral Health. Dental Sealants. Frequently Asked Questions*. Available at: <<http://www.cdc.gov/nccdphp/oh/child-sealants-faq.htm>>. Accessed April 5, 2002.
13. National Center for Chronic Disease Prevention and Health Promotion. *Children's Oral Health/Water Fluoridation. Water Fluoridation and Dental Sealants*. Press release. November 29, 2001. Available at: <<http://www.cdc.gov/nccdphp/oh/child-sealants-pr2.htm>>. Accessed April 5, 2002.
14. Dental Task Force of the Greater Houston Metropolitan Area, in collaboration with the Department of Dental Public Health and Dental Hygiene, Dental Branch, University of Texas Health Science Center at Houston, supported by the Texas Department of Health, Innovations Grant No. 74474474444 2001.
15. National Center for Chronic Disease Prevention and Health Promotion. *Children's Oral Health: Dental Sealants. Press release*. August 31, 2001. Available at: <<http://www.cdc.gov/nccdphp/oh/child-sealants-pr.htm>>. Accessed April 5, 2002.
16. Centers for Disease Control and Prevention. Populations Receiving Optimally Fluoridated Public Drinking Water—United States, 2000. *MMWR*, 2002 Feb 22;51(7):144–47. Available at: <<http://www.cdc.gov/mmwr/preview/mmwrhtml/mm5107a2.htm>>. Accessed April 5, 2002.
17. National Center for Chronic Disease Prevention and Health Promotion. *Recommendations for Using Fluoride to Prevent and Control Dental Caries in the United States*. August 2001. Available at: <<http://www.cdc.gov/nccdphp/oh/flfactcw2.htm>>. Accessed April 5, 2002.
18. National Center for Chronic Disease Prevention and Health Promotion. *Recommendations for Using Fluoride to Prevent and Control Dental Caries in the United States*. August 2001. Available at: <<http://www.cdc.gov/nccdphp/oh/flfactcw2.htm>>. Accessed April 5, 2002.
19. Texas Department of Health, *Water Fluoridation Costs in Texas: Texas Health Steps (EPSDT-Medicaid)*. May 2000. Available at: <<http://www.tdh.state.tx.us/dental/flstudy.pdf>>. Accessed April 5, 2002.
20. Centers for Disease Control and Prevention. Populations Receiving Optimally Fluoridated Public Drinking Water—United States, 2000. *MMWR*, 2002 Feb 22;51(7):144–47. Available at: <<http://www.cdc.gov/mmwr/preview/mmwrhtml/mm5107a2.htm>>. Accessed April 5, 2002.
21. Texas Department of Health, *Water Fluoridation Costs in Texas: Texas Health Steps (EPSDT-Medicaid)*. May 2000. Available at: <<http://www.tdh.state.tx.us/dental/flstudy.pdf>>. Accessed April 5, 2002.
22. Centers for Disease Control and Prevention. Public Health Focus: Fluoridation of Community Water Systems. *MMWR* 1992 May 29;41(21):372–75, 381. Available at: <<http://www.cdc.gov/mmwr/preview/mmwrhtml/00016840.htm>>. Accessed April 5, 2002.
23. American Dental Association. *ADA Dental Minute: Why Visit the Dentist?* Available at: <<http://www.ada.org/public/media/minute/DmVol10/dm-visit.html>>. Accessed April 5, 2002.
24. Texas Department of Health, Texas Behavioral Risk Factor Surveillance System, 1999. Available at: <<http://www.tdh.state.tx.us/chronicd/default.htm>>. Accessed May 30, 2002.



Chapter 10: Environmental Health

1. MSN online dictionary. Available at: <<http://dictionary.msn.com>>. Accessed April 12, 2002.
2. Texas Natural Resource Conservation Commission. *State of the Texas Environment: Strategic Plan, Fiscal Years 2003–2007, Volume 2:45*. Available at: <http://www.tnrcc.state.tx.us/admin/topdoc/sfr/035_02/035_02.html>. Accessed July 19, 2002.
3. American Lung Association. *Trends in Air Quality*. August 2001. Available at: <<http://www.lungusa.org/data/aqp/aqp1.pdf>>. Accessed April 11, 2002.
4. Texas Department of Health. Indoor Air Quality Branch. *Frequently Asked Questions*. Available at: <<http://www.tdh.state.tx.us/beh/IAQ/lnk3.htm>>. Accessed April 12, 2002.
5. Texas Department of Health. Indoor Air Quality Branch. *Frequently Asked Questions*. Available at: <<http://www.tdh.state.tx.us/beh/IAQ/lnk4.htm>>. Accessed April 12, 2002.
6. Texas Department of Health. Indoor Air Quality Branch. *Frequently Asked Questions*. Available at: <<http://www.tdh.state.tx.us/beh/IAQ/lnk7.htm>>. Accessed April 12, 2002.
7. Texas Department of Health. Indoor Air Quality Branch. *Frequently Asked Questions*. Available at: <<http://www.tdh.state.tx.us/beh/IAQ/lnk6.htm>>. Accessed April 12, 2002.
8. US Environmental Protection Agency. *What are the Health Effects of Contaminants in Drinking Water?* Available at: <<http://www.epa.gov/safewater/dwh/health.html>>. Accessed April 11, 2002.
9. Texas Natural Resource Conservation Commission. *State of the Texas Environment: Strategic Plan, Fiscal Years 2003–2007, Volume 2:45*. Available at: <http://www.tnrcc.state.tx.us/admin/topdoc/sfr/035_02/035_02.html>. Accessed July 19, 2002.
10. Texas Natural Resource Conservation Commission. *State of the Texas Environment: Strategic Plan, Fiscal Years 2003–2007, Vol. 2:45*. Available at: <http://www.tnrcc.state.tx.us/admin/topdoc/sfr/035_02/035_02.html>. Accessed July 19, 2002.
11. Texas Natural Resource Conservation Commission. *State of the Texas Environment: Strategic Plan: Fiscal Years 2001–2005, Vol. 2:45*. Available at: <http://www.tnrcc.state.tx.us/admin/topdoc/sfr/032_02/035_02.html>. Accessed July 19, 2002.
12. Judy Henry, Texas Department of Health, Environmental Epidemiology Division, Bureau of Epidemiology, personal communication, July 9, 2002.
13. Texas Natural Resource Conservation Commission. *State of the Texas Environment: Strategic Plan, Fiscal Years 2003–2007, Vol. 2:45*. Available at: <http://www.tnrcc.state.tx.us/admin/topdoc/sfr/035_02/035_02.html>. Accessed July 19, 2002.



14. Texas Natural Resource Conservation Commission. *State of the Texas Environment: Strategic Plan, Fiscal Years 2003–2007, Vol. 2*:45. Available at: <http://www.tnrcc.state.tx.us/admin/topdoc/sfr/035_02/035_02.html>. Accessed July 19, 2002.
15. Janet Pichette, Texas Natural Resources Conservation Commission, Strategic Environmental Analysis Group, Office of Environmental Policy, Analysis, and Assessment, personal communication, July 2, 2002.



More information on the Texas Strategic Health Status Indicators can be found at <http://www.tdh.state.tx.us/talho/>.

Purpose

Developing consensus on core measures is the initial step in developing a public health system's health assessment capacity. The National Public Health Performance Standards (CDC at <http://www.phppo.cdc.gov/nphsp/>) calls for assessment of health status both at the community level and statewide. Texas has joined a small number of states such as Washington, Florida, and Missouri in developing core health status indicators. These indicators provide local-level data for trend analysis, comparison of geographic areas and populations, analysis and understanding of the determinants of disease, and evaluation of the impact of a public health system. In addition to these major benefits, health indicators also serve as a starting point to:

- Compare geographic areas and populations;
- Analyze and understand the determinants of disease;
- Determine disease trends;
- Measure community health status;
- Market public health at the community level;
- Inform elected and appointed officials of community health problems;
- Assist communities in identifying priorities;
- Mobilize resources to prevent disease and promote health;
- Establish benchmarks for improving community health; and
- Develop local public health improvement plans to assure efficient and effective use of resources.

Milestones in the Adoption of the Indicators

The creation and adoption of the Texas Strategic Health Status Indicators was the result of a partnership between the Texas Association of Local Health Officials (TALHO) and the Texas Department of Health (TDH). Major milestones in the process included:

Milestone 1

In September 2000 the TALHO and the TDH co-sponsored the Strategic Health Status Indicators Conference. Its purpose was to develop consensus on core measures for assessing public health progress at



the local level. At the conclusion of the conference, local, regional, and central office public health staff proposed a core set of 38 indicators, as well as 10 investigational indicators (i.e., potential sources of valuable public health data).

Milestone 2

On October 5, 2000 TALHO adopted two resolutions: (1) “Adoption of Health Indicators,” stating their organizational support for a set of core health indicators for use at the local level; and (2) “Adoption of an Investigational Indicator on Immunization Coverage,” thus recognizing the need for county, city, and sub-county immunization data.

Milestone 3

Proposed indicators, as well as background information on the project, were posted for 60 days on the TALHO website for public comment. Local, regional, and central office staff discussed the appropriateness and usefulness of the indicators at the local level and made suggestions for their improvement.

Milestone 4

A TDH technical team conducted quality checks on the numerators and denominators for the indicators and drafted recommendations to strengthen the data set. Test data were generated for three Texas counties (McLennan, El Paso, and Terry) and posted on the TALHO website.

Milestone 5

TDH staff drafted technical notes for the indicators as well as recommendations for changes for TALHO consideration.

Milestone 6

On February 8, 2001 the TALHO Board considered recommendations and unanimously approved the proposed Texas Strategic Health Status Indicators (TSHSI).

Milestone 7

In April 2001 data for all Texas counties were posted on the TDH test Web site. The site was demonstrated for the TALHO Board and approved at its April meeting.

Domain Descriptions

To ensure that the Texas Strategic Health Status Indicators covered the full range of community assessment data, the process of identifying and proposing potential indicators was guided by the Centers for Disease Control and Prevention’s (CDC) work on public health domains.

The concept of public health domains was created by the CDC in their work to standardize community assessment activities as a part of the National Public Health Performance Standards project. The CDC has created a framework for community assessment data called a community health profile (CHP) — described in detail as a part of the appendix for the National Public Health Performance Standards — local instrument <<http://www.phppo.cdc.gov/nphpsp/>>. The CHP lays out eleven domains in which data are gathered to inform decision makers of the health status of a community. The following are the CDC definitions for the domains that were used in the selection of the TSHSI:



Domain — Demographic Characteristics

Definition: Demographic characteristics of a jurisdiction include measures of total population as well as percent of total population by age group, gender, and race/ethnicity, where these populations and subpopulations are located, and the rate of change in population density over time, due to births, deaths, and migration patterns.

Domain — Socioeconomic Characteristics

Definition: Socioeconomic characteristics that have been shown to affect health status include income, education, and employment, along with the proportion of the population represented by various levels of these variables.

Domain — Community Assets and Quality of Life

Definition: Community Assets— Those contributions made by individuals, citizen associations, and local institutions that individually and/or collectively build the community's capacity to assure the health, well-being, and quality of life of the community and all its members. **Quality of life (QOL) —** A construct that “connotes an overall sense of well-being when applied to an individual” and a “supportive environment when applied to a community” (Moriarty, 1996). While some dimensions of quality of life can be quantified using indicators shown to be related to determinants of health and community well-being, other valid dimensions of QOL include the perceptions of community residents about their neighborhoods and communities that either enhance or diminish their quality of life.

Domain — Health Resources

Definition: This domain represents factors associated with health-system capacity, which may include the number of licensed and credentialed health personnel and the physical capacity of health facilities. In addition, this domain includes measures of access, utilization, cost, and quality of health care and prevention services. Service delivery patterns and roles of public and private sectors as payors and/or providers may also be relevant.

Domain — Infectious Diseases

Definition: Measures within this category include the incidence of diseases that are usually transmitted through person-to-person contact or shared use of contaminated materials. Many of these diseases can be prevented through a high level of vaccine coverage of vulnerable populations, or through the use of protective measures, such as condoms for the prevention of sexually transmitted diseases.

Domain — Community Health Status

Definition: Health status in a community is measured in terms of **mortality** (rates of death within a population) and **morbidity** (the incidence and prevalence of disease). Mortality may be represented by crude rates or age-adjusted rates; by degree of premature death (Years of Productive Life Lost: YPLL); and by cause (disease — cancer vs. non-cancer or injury — intentional vs. unintentional).

Domain — Maternal and Child Health

Definition: This category focuses on birth data and outcomes as well as mortality data for infants and children. Because maternal care is correlated with birth outcomes, measures of maternal access to care and utilization of care are included. Births to teen mothers are a critical indicator of increased risk for both mother and child.



Domain — Behavioral Risk Factors

Definition: Risk factors in this domain include behaviors which are believed to cause, or to be contributing factors to, accidents, injuries, disease, and death during youth and adolescence and significant morbidity and mortality in later life.

Domain — Sentinel Events

Definition: Sentinel events are those cases of unnecessary disease, disability, or untimely death that could be avoided if appropriate and timely preventive services or medical care were provided. These include vaccine-preventable illness, avoidable hospitalizations (those patients admitted to the hospital in advanced stages of disease which potentially could have been detected or treated earlier), and late stage cancer diagnosis. Sentinel events may alert the community to health-system problems such as inadequate vaccine coverage or lack of primary care or screening.

Domain — Environmental Health

Definition: The quality of our physical environment, including air, water, and food, directly impacts health and quality of life. Exposure to environmental substances such as lead or hazardous waste increases risk for preventable disease.

Domain — Social and Mental Health

Definition: This domain represents social and mental health conditions which directly or indirectly influence overall health status as well as individual and community quality of life.

Texas Strategic Health Status Indicators

- Population distribution by age, sex, and race/ethnicity for current year; 5-and 10-year projections
- Socioeconomic status — per capita income; poverty rate; disadvantaged
- Educational attainment — percent of persons age 25+ who completed high school
- Limited English proficiency; linguistic isolation
- Single-parent households
- Mortality rate (all causes)
- Years of Potential Life Lost (YPLL)
- List of local public health services (participating and non-participating local health departments, federally funded community health centers, school health clinics) by county
- Population to health care professional ratio — primary care physicians (PCP), registered nurses, and dentists
- Medically Underserved Areas and Health Professional Shortage Area as designated by the Health Resources and Services Administration (HRSA).



- Ratio of Medicaid eligibles to participating primary-care physicians (Medicaid eligibles; PCPs; Medicaid eligibles per PCP)
- Number and ratio of Emergency Medical Services (EMS) certified individuals per 1,000 population by level of EMS certification
- Infant mortality rate by mother's age and race/ethnicity of mother
- Child mortality rate
- Prenatal care in first trimester
- Percentage of low birth weight infants
- Annual teen adolescent pregnancy rate; five-year average for teen adolescent pregnancy rate
- Special population indicator for border areas: neural tube defects
- Cardiovascular-disease mortality
- Cancer mortality
- Diabetes mortality
- Chronic lower respiratory disease mortality
- Lung cancer mortality
- Rate of common bacterial sexually transmitted diseases
- Body fluid-borne pathogens (hepatitis B, hepatitis C, and HIV)
- Tuberculosis rate
- Intentional and unintentional injury mortality rates
- Enteric disease rate (*Campylobacter* species, *E. coli* O157:H7, *Listeria monocytogenes*, *Salmonella* species, *Cyclospora cayetanensis*, and *Shigella*, cases of postdiarrheal hemolytic uremic syndrome)
- Hepatitis A rate
- Population served by fluoridated water systems
- Percentage of the population served by a Texas Natural Resource Conservation Commission-regulated public water supply system that is in compliance with the Primary Drinking Water Standards
- Special population indicator for urban areas: Annual number of days in which the ambient air monitors record an air quality standard being exceeded.



- Suicide rate
- Deaths related to drug and alcohol abuse
- Rate of confirmed cases of child abuse or neglect
- Violent crime arrests
- Divorce rate

Texas Strategic Health Status Investigational Indicators

The selection of the Texas Strategic Health Status Indicators was based on two criteria:

1. The data had to be available at the county level for each of the 254 Texas counties; and
2. The indicator had to be a reliable and valid indicator of the health of Texas communities.

These two criteria severely limited the choice of indicators. As a result, TALHO generated another category of indicators: *investigational indicators*.

Investigational indicators are data that would greatly assist in assessing the progress of local public health, but are not currently being collected at the county level in Texas. It is the recommendation of TALHO that state and local public health entities work collaboratively to make these data available in the future.

The following investigational indicators were identified by participants at the September 2000 TSHSI conference. They are listed by priority rating (determined by vote of the conference attendees).

1. Vaccination coverage
2. Percentage of insured or uninsured including dental, mental, and primary care
3. Extending the Behavioral Risk Factor Surveillance System to collect county-level data
4. Asthma hospitalizations
5. Diabetes complications
6. Breastfeeding in first 6 months
7. Laws, ordinances, or policies on smoke-free indoor air that prohibit smoking or limit it to separately ventilated areas in government facilities and permitted food establishments
8. Transient populations (migrant, homeless, undocumented)
9. Food purchase and consumption
10. Planned births
11. Availability of child care



The following were added as investigational indicators by recommendation of TDH (TALHO suggested indicators that require additional research):

1. Emergency-room visits as a percentage of total hospital visits
2. Avoidable hospitalizations
3. Intentional injury rate, assault rate, self-inflicted injury rate, unintentional injury rate, motor vehicle crash injury rate, and fall rate
4. Number of emergency Medicaid deliveries to undocumented mothers — special population indicator for border areas (for FY2000 and subsequent years)





TDH

#90-11514

7/02